American Aviation

SERVING THE INDUSTRY SINCE 1937

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American Airlines' C. R. Smith
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American Aviation NEWSLETTER

Volume 15 Number 36 February 4, 1952

In a broad policy statement, A. C. Hahn, executive director-transportation for the Post Office department, declared the PO does not intend to pay higher rates to one airline than to another for carrying mail between the same two points.

Post Office officials, he said, favor the establishment of a pay structure containing a line-haul rate (a standard ton-mile rate applicable to all carriers) and a piece-handling charge for each bag or piece of mail loaded or unloaded from planes.

This system, Hahn declared, would establish the same rate for all air mail transportation between two points, at the same time recognizing the higher unit costs at light traffic points through the piece-handling charge.

Capital Airlines was the first to be notified of the new policy when it learned the Post Office would not place mail on its flights at the 53c per ton-mile rate when the PO could use trips of another line between the same points at 45c per ton-mile.

Delta Air Lines will probably be similarly affected, since it too accepted the CAB-proposed 53c rate. National Air Lines is in the same category and Western Air Lines is expected to accept that rate shortly.

Thus, unless the CAB intervenes, the 53c carriers will lose mail pay on any segments where they parallel the 45c operators, American, United, TWA and Eastern.

•

Flurry of investigations was touched off by the crash of an American Airlines Convair 240, the most sweeping one promised by a five man group from the House Interstate and Foreign Commerce Committee.

Headed by Rep. Lindley Beckworth (D., Tex.), the investigators intend to check not only recent crashes and airport locations but all phases of aviation safety as well.

Beckworth's group, which includes Hinshaw of Calif., Klein of N. Y., Wolverton of N. J. and Carlyle of N. C., will probe civil air safety regulations, pilot training practices, ground and airborne electronic equipment and aircraft and engine maintenance practices.

Two investigators for the Senate Interstate and Foreign Commerce Committee also visited the crash site at Elizabeth, N. J., to gather information for its chairman, Sen. Edwin C. Johnson (D., Colo.).

The crash itself started the usual mass hysteria at Elizabeth (where townspeople held a "mass indignation" meeting), at Albany, N. Y. (where a bill was introduced in the state legislature to probe "aviation hazards") and in Washington (where legislators dropped several bills in the hopper to relocate Newark Airport and/or to investigate air safety throughout the nation).

•

Hundreds of firms making military aircraft components will start receiving A-1 priorities for obtaining steel, copper, and aluminum by the third quarter or sooner.

These companies, now listed as B product makers even though most of their production is for the military aircraft program, currently file for CMP allotments with NPA industry divisions.

Under a new agreement just reached between NPA and the Munitions Board's Aircraft Production Resources Agency at Dayton, they will file for materials for their aircraft components with APRA. This is a complete revision of an earlier proposed policy which would have restricted A-1 priorities to fewer than 50 companies.

To qualify for the A-1 priority, these hundreds of components makers will have to be able to show that most of their products end up in the aircraft program.

•

Under the Air Force's plans for fiscal 1953, three new fighters and a new twin engine transport are slated to be ordered into production.

Fighters include a modified version of the McDonnell XF-88, designated F-101; a Convair F-102, which won a design competition last year; and a heavier, more powerful version of the F-86, to be known as the F-100.

The transport will be the Convair 131A, actually a military version of the Convair 240.

•

State Department employes have been told to travel to their destinations by the most direct means, meaning that American flag airlines spanning the oceans will be getting more State business in the future.

The new policy states that "while the use of American flag airlines is not required by law, as a matter of policy, when air travel is involved, American flag airlines shall be used whenever practicable and economically feasible."

•

Although the shortage of most machine tools remains critical, Fisher Body Division of General Motors has been told to hold up production of

757 Bullard turret lathes for the jet engine program.

Order to GM follows USAF's recent decision to stretch out airframe and engine production schedules. Thus, the lathes Fisher Body was to start delivering next year will no longer be needed. The Bullard Machine Co. and two other producers who have prime orders for turret lathes will turn out enough themselves to take care of USAF needs over the longer period.

If GM's $69 million Bullard sub-contract is cancelled entirely after a complete USAF investigation, Fisher will be reimbursed for the money it spent in retooling for the program and will receive a small profit in addition.

•

If Congress approves the National Advisory Committee for Aeronautics' share of the fiscal 1953 budget, the agency will receive almost $4 million more for research activities and about $8.5 million more for construction and equipment than it is receiving now. NACA is down for $54.3 million for operations and $19.9 million for construction and equipment.

CAB's portion of the budget is just about the same as 1952's, the total request for fiscal 1953 coming to $3.98 million as against $3.87 this year.

•

Civil Aeronautics Board can be expected to take legal action against other non-scheduled airline ticket agencies following issuance of a permanent injunction against Major Air Coach System by Judge Ben Harrison in Federal Court in Los Angeles last week. Injunction, requested by CAB, was issued upon consent of the agency which decided against going to trial. It restrains Major from (1) holding out to the public as an air carrier, (2) selling tickets in its own name and (3) from chartering or leasing aircraft from authorized air carriers to provide transportation in its own name.

While not a clear-cut court precedent, because of the consent action and absence of trial, CAB is confident it can now deal with agencies it feels are violating the Civil Aeronautics Act. In presenting its case against Major, CAB submitted affidavits of people who purchased transportation from the agency thinking it was actually an air carrier.

•

MANUFACTURERS

Renegotiation Board now has jurisdiction over contractors subject to both the 1948 and 1951 Renegotiation Acts. It set up regional offices in New York, Chicago, Washington and Los Angeles. Reporting forms are now in the mail to 17,000 contractors.

Aircraft manufacturing industry, including engines, propellers and parts makers, received 404 rapid tax write off certificates through Nov. 30. Of the $567.1 million to be invested under these 404 authorizations, $387.6 million is eligible for fast amortization.

Harper Woodward, aviation consultant to Laurence S. Rockefeller, has resigned as a director of McDonnell Aircraft Corp., in which Rockefeller has a substantial stock interest.

Packard Motor Car Co. will become the "first and biggest" producer of the General Electric J-47 jet engine, according to Sen. Blair Moody (D., Mich.). DPA and the Air Force have agreed on giving Packard a high priority on machine tools for the J-47 program. GE and Studebaker Corp. also have prime contracts to build the engine.

Bell Aircraft stockholders have approved a 2-for-1 stock split and an authorization to boost authorized shares to 1,250,000. President Lawrence D. Bell and first vice president Ray P. Whitman were given restricted stock options for 40,000 and 12,000 shares respectively.

Russia is turning out 100,000 technicians and engineers a year while the U. S. is getting only about 26,000 a year at present, according to AIA president DeWitt C. Ramsey. Prospects for improvement are slim.

•

PLANES AND EQUIPMENT

Britain's de Havilland Comet has the distinction of being the first turbojet civil airliner to be officially approved for commercial flying. The plane received its certificate of airworthiness from the Air Registration Board in Britain last week.

North American Aviation's Columbus plant has turned out its first Navy plane, an AJ-2P Savage. The photo-reconnaissance version of the AJ-2 is powered by two R-2800 P&W engines and an Allison J-33 tubojet. It will undergo extensive ground tests before its first flight.

First production model of the Convair 340 has made its first flight, staying aloft two hours and three minutes.

Sikorsky Aircraft Division turned over to the Army at Fort Bragg, N. C., the first of 97 H-19 cargo helicopters it is scheduled to deliver to the Army this year.

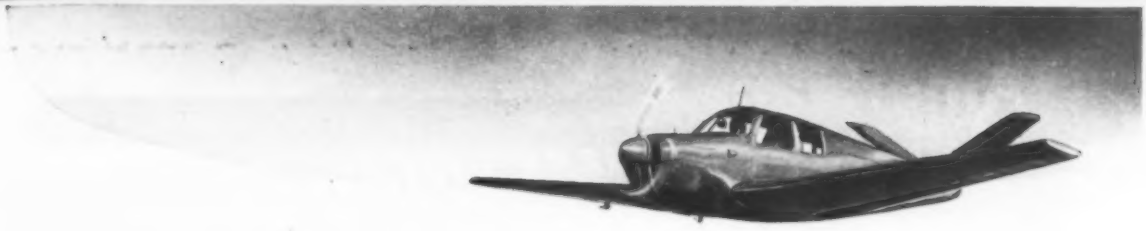
•

MILITARY

Changes in the USAF's Air Research and Development Command include moving Maj. Gen. Donald L. Putt, ARDC vice commander, to the Wright Air Development Center as temporary commanding general, replacing Maj. Gen. Fred R. Dent, Jr., who is being reassigned, and transferring Brig. Gen. Albert Boyd from head of Edwards AFB to Dayton as WADC's vice commander.

Lt. Gen. George E. Stratemeyer, 61, has retired from the Air Force after 36 years of service. His most recent assignment was commander of the Far East Air Forces.

Nominated by President Truman for promotion were Col. Kern D. Metzger, director of the Aircraft Production Resources Agency, (to temporary brigadier), Brig. Gen. Arthur Thomas, head of AMC's Eastern Air Procurement District (to temporary major general) and Col. George W. Goddard, head of the AMC Photo Lab, (to temporary brigadier).



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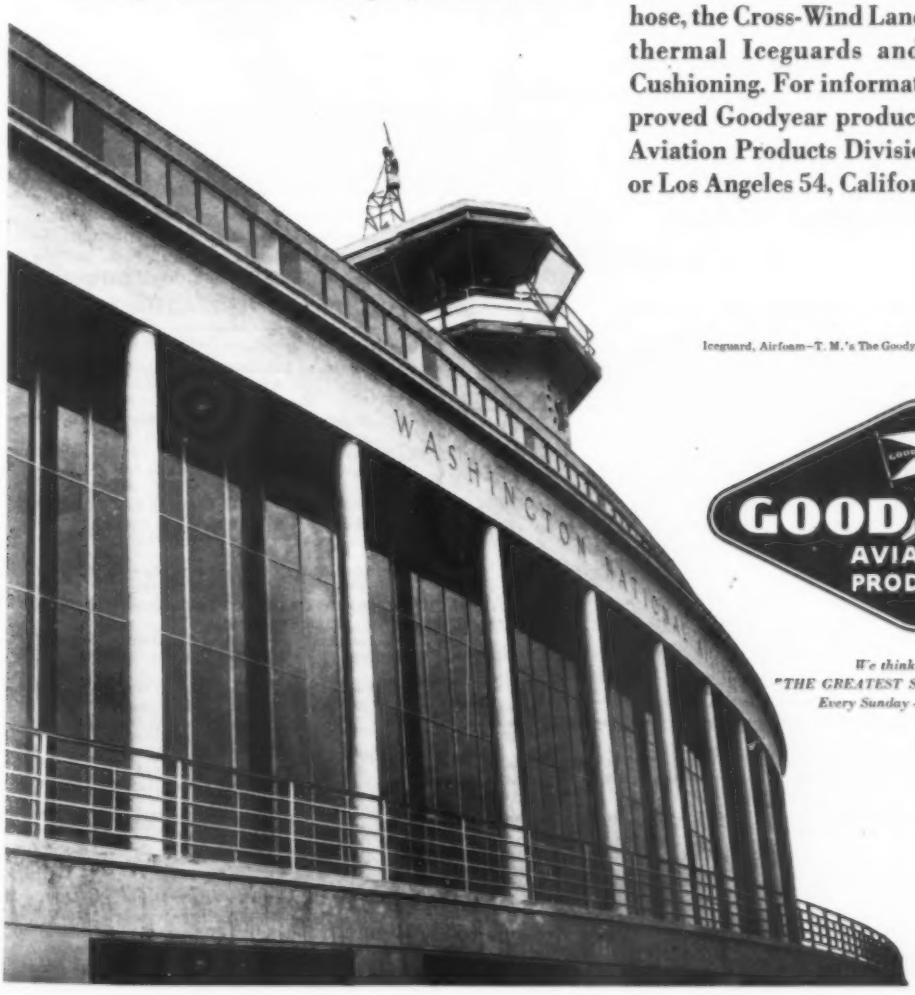

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other publications

American Aviation Daily (including **International Aviation**): Published daily except Saturdays, Sundays and holidays. Subscriptions: $18 one month; $200 one year. Daniel S. Wentz II, managing editor.

American Aviation Directory: Published twice a year, spring and fall. Single copy, $7.50. Marion E. Grambow, managing editor.

Official Airline Guide: Monthly publication of airline schedules and fares. Subscriptions: U. S. A. and countries belonging to the Pan American Postal Union, including Spain and the Philippines, $9.00 one year, Canada, $9.50. All other countries, $11.00. Published from editorial offices at 139 North Clark St., Chicago 2, Ill. Central 6-5804. C. N. Johnson, managing editor.

American Aviation Traffic News (incorporating **Air Tariff Reports**): Published daily except Saturdays, Sundays and holidays. Subscriptions: $150 a year. Preble Staver, managing editor.

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American Aviation is published every Monday by American Aviation Publications Inc., Washington, D. C. Printed at the Telegraph Press, Harrisburg, Pa. Subscription rates for United States, Canada, Mexico, Central and South American countries—$5.00 for 1 year; $8.00 for 2 years; $10.00 for 3 years. All other countries—$7.00 for 1 year; $12.00 for 2 years. Entered as Second-Class matter in Washington, D. C., and Harrisburg, Pa.

Publishing Corporation: American Aviation Publications, Inc., Wayne W. Parrish, president; Albert H. Stackpole, Eric Bramley, vice presidents; E. J. Stackpole, Jr., secretary-treasurer; Leonard Eiserer, assistant secretary-treasurer.

West Coast Office: Park Central Building 412 West Sixth St., Los Angeles 14, Calif. Trinity 7997. Fred S. Hunter, manager.

Chicago Office: 139 North Clark St., Chicago 2, Ill. Central 6-5804. Bruce L. McGregor, regional advertising manager.

Foreign Advertising Representative: United Kingdom—Pearl, Cooper Ltd., 2-3 Norfolk St., Strand, London, W. C. 2. Tel. Temple Bar 8111/2.

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Editorial

It's Big Business, But....

THE FIVE members and the staff of the Civil Aeronautics Board have some weighty material to ponder in the interview with C. R. Smith, president of American Airlines, published elsewhere in this issue.

Air transportation has become big business. It has had to undertake a great new equipment program. New equipment costs a great deal of money. To obtain large financing the industry must now compete with other and bigger industries. And financial support only comes to industries capable of making continued profits and meeting interest and dividend payments.

by W. W. P.

The CAB is apt to nod its collective head in agreement with the foregoing without really understanding what it all means. But in the final analysis the financial stability of the industry depends on the CAB learning lessons from the past and assuring the carriers a continued record of profitable operation. It can assure this stability by avoiding another round of route expansion of the type that brings on wasteful competition and a dilution of traffic required to keep each company in the black.

The industry's past record has not been well regarded in the financial circles which must provide the money. The CAB has in its power to provide for this period of equipment financing a stability of profitable operations never before had.

We would not suggest that all route expansion or alteration must be stopped forthwith, but we do believe that the bulk of expansion of trunk routes has already been undertaken and that further expansion or extension must be regarded with real consideration and caution. Mergers within both the trunk and local service groups are most assuredly in order when these make for increased economy and efficiency. Route adjustments and in some cases minor route additions to effect more efficient and economical regional or sectional operating systems are in order. But we are not at all sure that all five members of the CAB understand what is judicious and beneficial, and what is merely wasteful. Competition can be creative or economically harmful.

The CAB has a responsibility today which far overshadows its obligations during the promotional and expanding days. The industry is now a big machine being watched closely by other industries and by financial circles. To tinker with the machine without understanding what makes it operate could be disastrous. Two members of the CAB, especially—Messrs. Joseph Adams and Josh Lee—have yet to give indications that they truly understand how to keep this new and big machine in efficient and economical operation.

So let the CAB and its staff study Mr. C. R. Smith's comments in this issue. Let them also read the speech he gave last November before The Security Analysts of San Francisco. The air transport machine needs to be kept oiled, maintained, and repaired. Parts can be replaced or added to make it larger and more efficient. But don't tinker with the basic structure without understanding what makes it operate. Politics, whims, ignorance, and the grinding of personal axes make poor repairs.

How Serious is Noise?

IN THE early days of the railroads everybody welcomed the iron horse with open arms. As the railroads expanded and frequencies increased and locomotives got larger and more powerful, there were complaints about noise and soot. Those who had found it so convenient to be near this new means of transportation found it more convenient to move as far away from the tracks and switching yards as possible.

The first hard-surfaced highways were welcomed as one of the greatest boons to mankind. But as traffic increased and motor trucking developed, highways were found to be mixed blessings. Anyone who lives on or near a major highway can testify to the 24-hour thundering noise of auto and truck traffic—and how this traffic shakes buildings and rattles the windows.

The first commercial airplanes were welcomed by communities wanting faster transportation and everybody demanded that airports be built as close to cities as possible. The favored city was the city with a close-in airport. But frequencies increased. So did the size and power of the engines. Noise began to be a problem for those who lived so conveniently near the airport.

Noise is the inevitable product of a technological age. Some of the same people who decry airplane noise will sit in a stuffy cafe shouting their conversation over the strident irritating racket from a juke box. Conversations are conducted over the noise of a radio spouting jingle commercials and soap opera trivia. The human ear is bombarded by all manner of unpleasant sounds in this modern world.

People who live in a quiet small town can hardly sleep the first night or two when they go to New York or Chicago. But those who live in noisy areas in big cities soon become accustomed to traffic and other routine sounds. Everything possible should be done to lessen noise but one powerful fact remains— as long as there are airplanes there will be noise. Like other noise-producers, the airplane will have to be accepted.

Memorial Award

IT IS very thoughtful of Trans World Airlines to establish a new award in memory of two well known aviation writers as part of its annual aviation writing competition. The award will honor Gerard B. Dobben, legislative editor of AMERICAN AVIATION PUBLICATIONS who died last September, and James J. Strebig, aviation editor of the Associated Press who died last October. Both men had been winners of TWA writing awards. All aviation writers are pleased that TWA is taking this means of honoring two fine men whose writings helped to create a better understanding of air transport problems.

. . . WAYNE W. PARRISH

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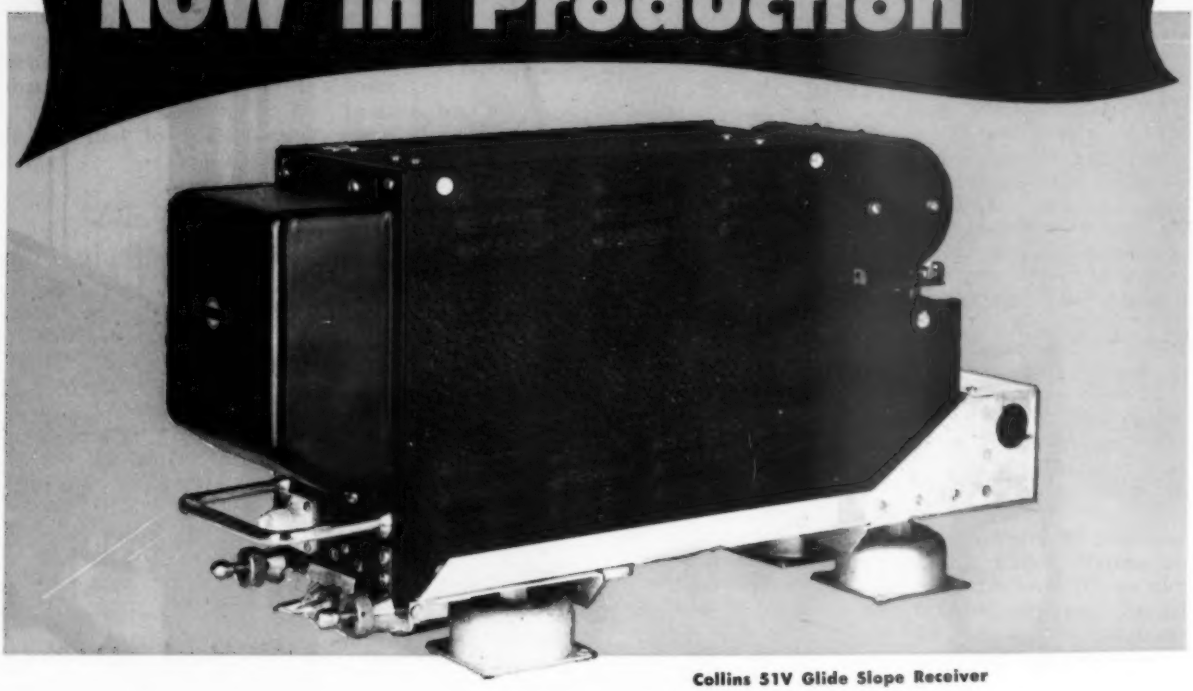

Collins 51V Glide Slope Receiver

The design of the Collins 51V-1 receiver, now on the assembly line, is based on "Glide Slope Receiver Characteristics" issued by Aeronautical Radio, Inc.

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Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

Airport Railways

To The Editor:

In your issue of August 6th, 1951, Page 48, you have inserted a photograph of a railway line crossing the Beech Aircraft Company's airfield at Wichita and part of the caption reads, "The World's First airport tower controlled railroad." However, I would like to point out that this is not strictly correct as in this country, during the war years, the aerodrome at Gisborne was extended to bisect the main East-coast railway between Gisborne and Napier. A system of controlling railway traffic by means of lights was installed and operated for a number of years. These lights were controlled from the Control tower. The system was suspended after a few years due to that portion of the runway which intersected with the railway line being closed, but in the last few years this portion of runway was re-opened, and the runway signalling system has been re-activated.

We felt it necessary to bring this to your notice in order to clear up any misunderstandings and incorrect impressions which might arise as a result of your photograph. We would like to point out too that the railway line which crosses the runway at Gisborne is not a spur line as is the case at Wichita, but is the main East-coast railway.

A. S. A. MURRAY
Controller of Information Services
Air Department
Civil Aviation Branch
Wellington C. 1., New Zealand

Adolescents

To the Editor:

Now that the airline industry is in the billion dollars a year class why doesn't the industry come out of the adolescent stage? Competitively the airlines act like a bunch of youngsters after candy.

Instead of educating the people to the safety of flying they, through misleading advertising, have caused the people to question the airplane's position in travel. We grant that there are more people flying today than at any time in the history of aviation but if you ask those people who have flown if they have butterflies in their stomachs upon landing an airplane, eight of every ten will admit this to be true.

This being the case why doesn't the line industry play up safety instead of knocking one another as to types of planes which one airline has in comparison to their competitors. For example, the scheduled airlines condemning the irregular carriers that they haven't a safe plane in the air. If facts were looked up on some of the airplanes used by the regulars it would be found that they are five to six years older than planes flown by independent airlines. All planes that are flown in common carriages are governed by the CAA —a government body which regulates safety for all airlines. So the question of safety of one airline against the other does not hold true.

The independents in 1945 have probably innovated into the airline industry the greatest mass travel movement at costs that an average worker can afford and also make it a profitable venture on a business basis. The regular airlines at the beginning thought this mode of travel, via aircoach, to be impossible, but as the years passed from 1945 it became a hot potato. The only way they had to fight this movement was to discredit the independents.

A few far-sighted men in the scheduled airlines saw the possibilities of aircoach and ventured forth and found that it was the shot in the arm the airline industry needed. Through the years aircoach has paved the way for the regulars for increase in business, for they acclimated the lower income class into using the airplane in place of the train. Thus an overall increase for all services in airplane travel.

The old saying goes that big business is not so stuck on private enterprise when it benefits the small business man and the masses is shown in the airline picture.

CHARLES L. WOHLERS
Manager
North American Airlines
Philadelphia, Penna.

The Rijst Tafel

To The Editor:

I have just read in En Route your most enjoyable write-up regarding the "rijst tafel" which we had during your stay in Singapore. This article certainly gave an excellent idea of what a "rijst tafel" involves.

We receive AMERICAN AVIATION regularly and find it of much interest.

J. F. VAN MACKELENBERGH
KLM Royal Dutch Airlines
Singapore

Books

WHITE'S AIR DIRECTORY. *Vol. 5, 1951-52. Price 10/6d. Published by White's Aviation Ltd., Dilworth Building, Queen Street, Auckland, N. Z.*

This is the latest edition of a complete air directory of New Zealand, including a Who's Who of everybody important in aviation in that country. All aviation firms and organizations are given in detail, including much additional aeronautical information about the country.

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LIGHTER MORE RELIABLE ELECTRIC SYSTEMS WITH

When & Where

Feb. 5—Washington Chapter, Institute of the Aeronautical Sciences, sponsored by American Helicopter Society, National Museum Auditorium, Washington, D. C.

Feb. 7—Society of Automotive Engineers, New York Metropolitan Section, "Aircraft Manufacturers Night"—Igor Sikorsky, principal speaker.

Feb. 7-8—Instrument Society of America, New York Section, Power Plant Symposium, Statler Hotel, New York.

Feb. 19-20—Piper Distributors Meeting, Lock Haven, Penna.

Mar. 3-6—Institute of Radio Engineers, Waldorf-Astoria Hotel and Grand Central Palace, New York.

Mar. 14—Institute of the Aeronautical Sciences, Seventh Annual Flight Propulsion Meeting, Cleveland, Ohio.

Mar. 17-19—Second Mid-Western Conference on Fluid Mechanics, Ohio State University, Columbus, O.

Mar. 20-22—Airport Operators Council, Annual Meeting, Hollywood-Roosevelt Hotel, Los Angeles, Calif.

Mar. 30-Apr. 3—American Association of Airport Executives, Annual Convention, Fort Worth, Texas.

Apr. 21-24—Society of Automotive Engineers, Aeronautic, Aircraft Engineering Display & Technical Air Review, Statler Hotel, New York.

May 8-9—Fifth Annual Wisconsin Aeronautics Conference, Green Bay, Wisconsin.

May 15-16—American Helicopter Society, 8th Annual Forum, Washington Hotel, Washington, D. C.

May 22-24—American Society for Quality Control, Sixth Annual Convention, Syracuse, N. Y.

June 1-6—Society of Automotive Engineers, Summer Meeting, Ambassador and Ritz-Carlton Hotels, Atlantic City, N. J.

June 9-21—International Organization for Standardization, Triennial Meeting, Columbia University, New York.

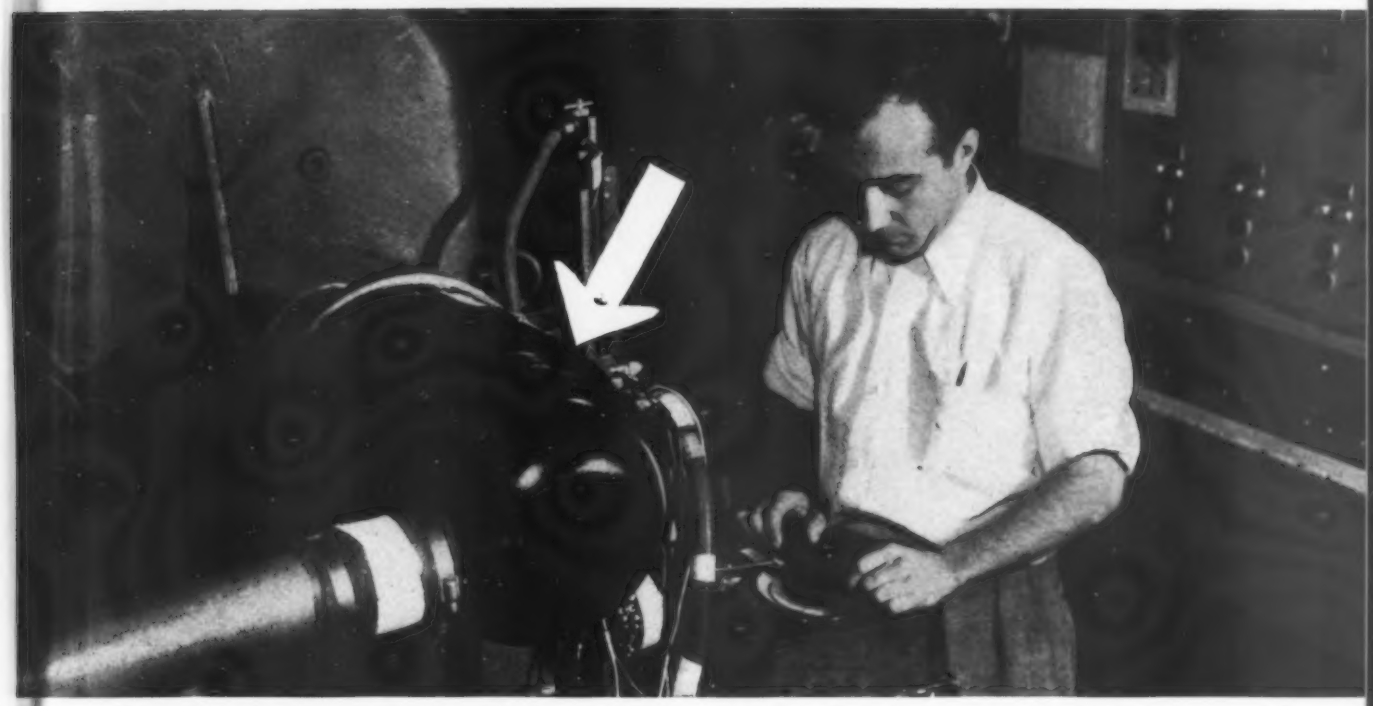
International

Feb. 22—ICAO, Third European-Mediterranean Meeting, Paris, France.

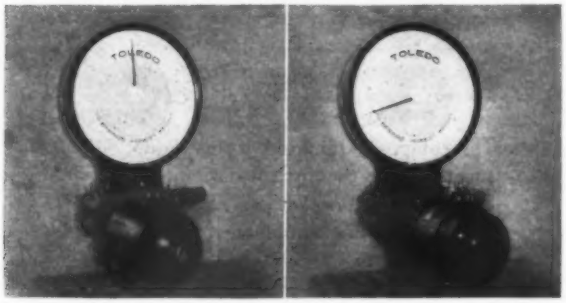
May 6—IATA Fifth Annual Technical Conference, Copenhagen, Denmark.

May 19—IATA Technical Committee, Thirteenth Meeting, Copenhagen, Denmark.

LIGHTER, MORE RELIABLE ELECTRIC SYSTEMS WITH
New G-E Alternators

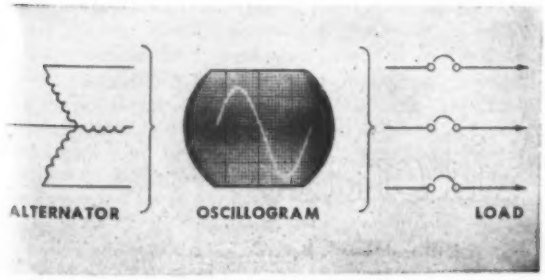


Rugged tests of new a-c generators (arrow) under worse than actual conditions establish their dependability in service. An outstanding feature of these alternators is their 300% short circuit current rating. This provides a safety margin to insure operation of the line clearing devices and gives positive short circuit protection.



30-KW D-C GENERATOR **30-KVA ALTERNATOR**

Weight is down 30% with the new alternator, over an equivalent d-c generator. Exciter and slip ring brush wear is negligible at the low exciter currents in a-c machines. Sparking and brush wear of d-c generators under conditions of high altitudes and high power output are eliminated.



Nearly perfect sine wave output of the alternators allows proper operation of electronic equipment demanding a low percentage of harmonics in the voltage wave form.

300% Short Circuit Current Rating is Feature of New Line

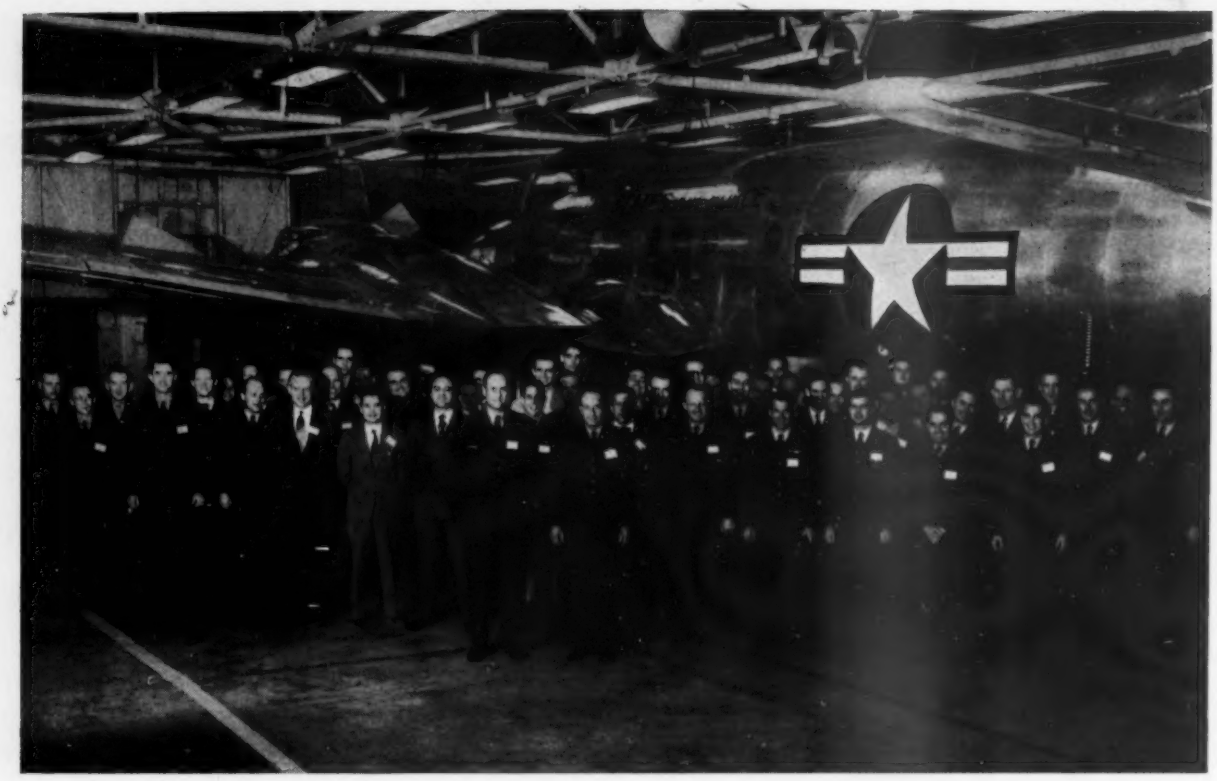
Savings in weight and space plus greater reliability are natural advantages of alternating current in aircraft electric systems. General Electric offers these benefits in a new line of 3-phase, a-c generators to satisfy nearly every combination of engines, airframes, and loads.

Available either wye- or delta-connected in a variety of ratings and speed ranges these alternators meet military specifications MIL-G-6099. Already a large number are on order by airframe manufacturers in addition to quantities being furnished the military services for both fighters and heavier aircraft.

Whether your problem is a-c or d-c, a single instrument or complete electrical systems for a fleet, contact your General Electric aviation specialist, or write General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

210-31



TEAMWORK

The photograph shows the majority of the members of the U. S. Air Force Mock-up Inspection group for the Beechcraft T-36A training airplane, posed in front of the dummy or "mock-up" T-36A prototype.

It is estimated that the total aggregate aircraft experience of the members of this board greatly exceeds 500 years. These specialists in Structures, Aerodynamics, Aircraft Power Plants, Electronics and Radar, Flying Safety, Pilot Training, and many other phases of aviation, all made contributions to the design of the T-36A Beechcraft.

The composite thinking of this group, together with the aircraft designing experience of Beechcraft's Engineering Department, has combined to insure an outstanding new training airplane for the U. S. Air Force.

Such teamwork between Government and Industry insures maximum economy in connection with the procurement of new types of defense equipment. Less than five months elapsed between the date of the contract and the date of the meeting of the Inspection Board.

Beech Aircraft

CORPORATION WICHITA, KANSAS, U. S. A.

percentage of harmonics in the voltage wave form.

GENERAL ELECTRIC
210-M

What's Behind the Aircraft Cutback?

(Background analysis by Military Editor James J. Haggerty, Jr.)

THE POST-WAR military production curve, which has been on a slow but steady ascent since the outbreak of war in Korea after a period of erratic climbs and dips, is due for another flattening out. Harassed by lack of machine-tool availability, material shortages, skyrocketing costs of labor and materials, long lead times of component items, and a multitude of less important considerations, the Department of Defense has ordered a major cutback in production schedules which will move back the estimated attainment dates of the Air Force and Navy expansion goals from 12 to 18 months.

The goals remain the same:

• **Air Force:** 126 combat wings and 17 transport wings.

• **Navy:** 16 carrier air groups and 50 supporting shore-based squadrons.

• **Marine Corps:** air power to provide support to three Marine divisions, estimated at 30 squadrons.

But while mid-1954 was to have been the attainment date for these goals, planners are now talking about the end of 1955.

Briefly, this is what the cutback involves:

Previously planned peak production rates are being sharply cut back and the period required to reach the peak lengthened. For instance, if a plant had been scheduled to turn out 30 planes a month by December, 1952, it might now be instructed to build toward a monthly rate of 20 planes by July, 1953.

Pentagon officials are still not commenting officially on the program, but when they do they will refer to it as a "revision of schedules." It is not a "cutback," they will say, because the same number of planes will be built—eventually. Nonetheless, it is a cutback in terms of a given calendar year, particularly in the critical calendar years 1952-53. Defense officials are wary of the public relations aspects of announcing the "rescheduling," and rightly so, for a critical, election-year Congress is almost certainly going to have some nasty words about it, in view of the repeated assurances that production goals were being met.

Money and Schedules

What is the reason for the cutback? There are two major reasons: (1) money and (2) "realistic scheduling."

• **Money:** The money problems come from two sources. First, the dollars appropriated last year have not gone as far as it was originally thought they would, because cost estimates for the planes we are buying today were drawn up as long as 18 months ago, and labor and material prices have continued to spiral upward during that period. Secondly, the original Air Force and Navy budget estimates for the coming year (fiscal 1953) were pared sharply; best information is that over $5 billion was cut before the budget was presented to Congress.

• **Realistic Scheduling:** But money alone would not have permitted maintenance of the previously planned schedules. Production of engines and other "long lead time" items like electronic equipment has been consistently behind schedule, and there appeared little hope of bringing it up to par. Since an engine-less airframe is of little value in a mobilization program, logically airframe completions had to be rescheduled to tie in with deliveries of the long-lead items.

Manufacturers were given the word of the cutback at a meeting in the Pentagon two weeks ago, attended by representatives of about 75 companies. Generally, the reaction was mild. Manufacturers, usually more realistic in their thinking than their Pentagon bosses, had, for the most part, been convinced for some time that the Pentagon planners were thinking wishfully when they set mid-1954 as target date for attainment of their goals.

What Rollback Means

Subcontractors, though, will probably not take as bright a view of the cutback. Many of the large prime contractors had lined up two, three, and four sources for a given subcontracted item. When the prime contractor sees his new schedules, however, he will probably find that he doesn't need that many sources; he might, in fact, be able to handle in his own plant the entire production of a component he had previously planned to subcontract. Thus, a good number of subcontractors may be dropped entirely from the aircraft production program.

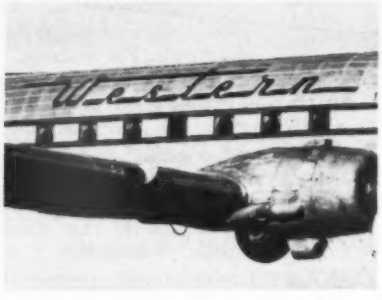
The military, with a watchful eye cocked against the wrath of the Senate Small Business Committee, will probably try to maintain a high level of subcontracting in spite of the rollback, but industry observers feel that subcontractors are in for trouble anyway.

First to feel the effect of the cutback was Fairchild Engine & Airplane Corp., whose new Chicago plant was closed down by the Air Force only a few months after it was opened. Fairchild had been working on a $25,000,000 facilities contract, tooling up for production of C-119 troop-carrying transports, and had hired about 800 employes at the Chicago plant when news of the closing came. There were other reasons for the Fairchild cancellation besides the general rollback: a sharp cut in requirements for C-119's to be shipped abroad under the Mutual Defense Assistance Program and difficulties in insuring the wooden plant.

The closing of the Fairchild plant is not to be construed as an indication that large-scale plant closings will follow. Quite the contrary. The Defense Department is still firm on its policy of "broadening the base," or bringing as many contractors as possible into the production picture. The plants of auto manufacturers who have been given aircraft contracts since Korea and the World War II plants reactivated by airframe manufacturers will stay in business, since producibility in case of emergency is still considered the major goal. Thus, those aircraft manufacturers who have "newcomers" helping them out on production will have to share their reduced work load with the newcomers.

The rollback should have one other major effect. Manufacturers will either have to lay off personnel under the new schedules or keep them on the payroll in case of a re-expansion in emergency. If they do the former it will complicate the labor problem later, for workers once dropped are hard to get back. If they do the latter, the man-hour cost per airframe pound will go up and the already astronomical costs of airplanes will go higher.

B.F.Goodrich



9 airlines report lower landing costs with B. F. Goodrich brakes

HERE'S WHAT maintenance superintendents and engineers of nine airlines have to say about the B. F. Goodrich Expander Tube brakes they are using on DC-3's:

"Far superior . . . both operational and maintenance wise."

". . . Have trouble-free operation and low parts replacement costs."

". . . by far best DC-3 brake available."

"Figures compiled in 1947 when operating other brakes and testing the B. F. Goodrich: Brake A—44¢ per landing; Brake B—17¢ per landing; B. F. Goodrich—7¢ per landing."

"Brakes give trouble-free service, not encountered any particular maintenance problem."

"Records indicate B. F. Goodrich substantially cheaper to operate than ordinary brakes. B. F. Goodrich is trouble-free brake."

"Service life of tires and brake drums increased when using B. F. Goodrich. B. F. Goodrich far superior."

"Operated 2 years with ordinary brake and maintenance very costly. Switched to B. F. Goodrich and costs have been very little."

"Cost of B. F. Goodrich has been determined to be 4¢ per landing" (parts replacement).

These comments all add up to "lower landing costs." BFG Expander Tube brakes cut cost per landing several ways. Full circle braking action spreads wear more evenly, lengthens brake life. Parts last longer because brake design dissipates heat quicker. Retractor spring action eliminates wear due to drag. Simple design of the brake reduces in-shop time. Extra parts and linkages are eliminated. Only tools needed to reline brake are screwdriver and pliers.

Product of BFG research and engineering, Expander Tube brakes can be designed into any plane. Write the B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.

B.F.Goodrich
FIRST IN RUBBER

ESTABLISHED JUNE 1, 1937

American Aviation

VOLUME 15 NUMBER 36

ONE OF THREE prominent U. S. jet transport designs, the Boeing 473 shows engines in pods suspended below the wings.

Year of Decision for U. S. Jet Transports

Design commitments will be made in 1952, although turbojet service not expected before 1958.

By WILLIAM D. PERREAULT

THIS is the year of decision for major U. S. airlines on jet transports.

This is the year in which two or more airlines are expected to make specific design commitments. Positive orders for jets may or may not be forthcoming but this is the year when the basic design concept of future U. S. jet transports will be determined.

This is the year when manufacturers will be able to proceed with prototype construction without government developmental support.

It is not in the cards for American transports to go into service before 1958. That's a long time off. But more developmental work must go into the future jet transport fleets than for any other type of transport airplane ever built in this country.

The nation's military economy and military policies have played and will continue to play a vital role in the time element. The military factor has been particularly responsible for the secrecy surrounding individual plans of manufacturers. During the defense build-up it is hardly discreet to promote commercial transport plans. Yet the British lead in jet and inherent rivalry among manufacturers is facing the issue steadily and surely.

Initial Steps

In fact there is good reason to believe that at least two manufacturers have taken long steps to finance construction of one or more prototypes and may have actually started preliminary work in the shops.

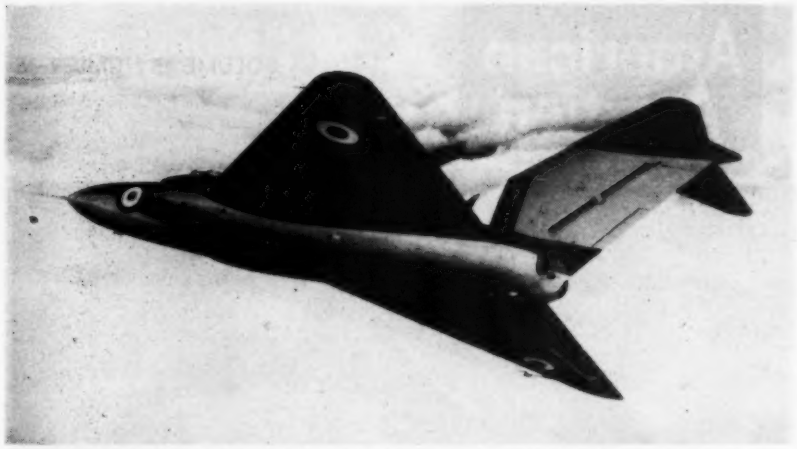
The government, too, may play a part. There is a possibility—some think it is a good possibility—that Senate bill S-2344, scheduled for Congressional review early this month, will get strong industry support. This bill provides for a construction differential subsidy, a sum of money contributed toward the cost of purchasing each U. S.-built jet aircraft to offset the relatively high cost of construction as compared with equivalent cost elsewhere. Construction differentials are common in the U. S. maritime industry. But passage of this bill into law during this session of Congress (this being election year) is not too likely.

Details of both the airlines' and the manufacturers' plans remain undisclosed. There have been various specifications floating about for examination but these specs have been undergoing constant changes.

Here is the general lineup among the manufacturers:

• **Lockheed Aircraft Corp.** has devoted much time and effort in design and initial sales effort on the L-193. This is a 148,000-pound, four-engine jet transport with engines buried in the fuselage aft of the wing. There are strong indications that the L-193 design, at least the one on which photos and data have been circulated, is obsolete. The company has flatly stated the published performance figures, including a maximum cruising speed of 564 miles per hour at 35,000 feet altitude, are obsolete.

Lockheed may have a major change in design concept awaiting the airlines.



GLOSTER GA 5, Britain's radar-equipped, all-weather, day-and-night, long-range new fighter, is powered by two Armstrong-Siddeley Sapphire jets.

Everyone has assumed that the jet transport would feature swept wings, a design used to delay shock-wave formation and resultant control problems. This has been the practice with high speed jet fighters in production. With the use of unswept wings in the new F-94C, Lockheed has shown that swept wings are not necessary with its production know-how on integrally stiffened wings.

Transport Application

Since the swept wing is blamed for higher stall speeds, control problems and longer field requirements, the design know-how which has produced the F-94C may well be put to work on a transport where the benefits of unswept wings might prove most rewarding.

• **Boeing Airplane Co.** has had a number of design proposals. The one which attracted the most interest was the 473, a low-wing, four-jet transport with a fuselage resembling the Boeing Stratocruiser and the wing and engine configuration of the Boeing B-47 Stratojet. Its gross operating weight was to be 135,000 pounds. The B-473 contrasted with earlier Boeing artist sketches showing a high-wing jet transport, more of a direct B-47 successor. The airlines have not been receptive to high wing planes.

• **Douglas Aircraft Co.** has an active jet transport development project, but has kept its activities the most closely guarded. No designation for the design nor detail of its characteristics or performance has "leaked." The one responsible comment on the nature of the aircraft is that of American Airlines' president C. R. Smith (see page 20) who has noted that it features engines mounted in the same manner as conventional piston engines ahead of the wing.

Douglas' part in the jet transport race should not be underestimated. Last official reports of world-wide transport activities showed that Douglas transports accounted for 57% of all aircraft in airline use. Douglas will undoubtedly defend this leadership with a worthy jet transport.

• **Canadair Limited,** Montreal, wholly-owned subsidiary of the Electric Boat Company, a U. S. corporation, should not be counted out for future plans. Canadair is known to be seriously interested in entering the international jet transport competition.

Among the airlines the situation looks like this:

• **United Air Lines** president W. A. Patterson has stated that his airline has submitted its specification for a jet transport to the aircraft industry. United's route structure provides adequate areas where an early jet transport type could be utilized.

• **One international operator** will follow UAL's example with its own specification within a month's time. The international operators may well lead the field on jet transport orders because of the competitive factors involved in introduction of Great Britain's de Havilland Comet, the 500 mph jet transport, into service this year.

• **C. R. Smith,** American Airlines' president, in an interview published elsewhere in this issue, acknowledges that the next aircraft type purchased by American will be a jet transport. He visualizes that this aircraft will see scheduled service in 1958.

• **Air Transport Association's** president Emory S. Land in a policy statement urging that the Congress provide funds for prototype testing of jet transport aircraft, said that the airlines do not want prototype developmental funds for jet transports. He noted that jet transports will be fostered and purchased in the same way as other postwar transports. Land's statement lent support to industry reports that the "Big Four" airlines were working out a specific program aimed at speeding up jet transport activities.

Engine Location

It might be said that the general characteristics of the aircraft that will fill the jet transport requirements are known. The biggest single factor which is controversial is the matter of engine location. Each of the three major proposals hinges on engine location—Lockheed with fuselage-mounted engines, Boeing with engines slung under the wings in pods and Douglas with engines reportedly in front of the wing in the style of piston engine types.

Another factor is powerplant capacity. Our early jet transports will have power ratings of 10,000-12,000 pounds thrust, according to current design trends. No such engine has achieved any degree of service operation. The highest powered commercially certificated engine is only 5,000 pound static thrust. While this might be bettered even today, military restrictions allowing, the proposed figures are some distance in the future with the reliability required of commercial operations.

Informed Action

This emphasizes the need for informed government action. Neither CAA nor CAB is in a position to establish informed regulations to guide airworthiness nor operational requirements of the air carriers operating jets. Unless the manufacturers and airlines are to be relieved of the burden of compliance with government regulations on these matters, which the industry has urged but which seem wholly unlikely, then these agencies must be given an opportunity to evaluate jet operations.

Only prototype jet transport testing funds can assure this. The recent support of prototype testing funds for this purpose alone may well be another in the series of trends which appears to herald early action on jet transport production for U. S. airlines.

Comet Certificated

Great Britain's de Havilland Comet became the first turbojet civil airliner to be officially approved for commercial flying, when on Jan. 22 it received its certificate of airworthiness from the British Air Registration Board.

Braniff, MCA Agree to Merge

Braniff Airways and Mid-Continent Airlines, in an unexpected move on January 24, reached agreement to merge, with Braniff the surviving company. The preliminary agreement, filed with the Civil Aeronautics Board, was signed by T. E. Braniff, president of Braniff, and T. F. Ryan III, chairman of MCA's board, with the approval of directors of both carriers.

Basis for the merger would be 1½ shares of MCA stock for one share of Braniff stock. J. W. Miller, president of MCA since 1936, would become vice president and a director of the merged company and would be in charge of integrating the employees of both companies. The deal calls for maximum integration of personnel.

The action was the second effort made by the two lines to merge. They tried unsuccessfully to consolidate their systems about 10 years ago. The agreement was reached in the face of a CAB investigation aimed at merging MCA and Continental Air Lines, a proceeding set to reach the prehearing stage last week.

Colonial to Operate as Division of NAL

If and when a National/Colonial merger is finally approved, National plans to operate the absorbed routes as the "Colonial Division of National Airlines," according to a preliminary agreement submitted for CAB approval. Directors of both lines have agreed to merge on the basis of ⅞ of a share of NAL stock for each full share of Colonial's.

But aside from these facts, other details are still being worked out in a definitive agreement which, when completed, will be subject to the approval of the directors of both companies, and then presented for stockholders' approval. Meanwhile, neither National nor Colonial has indicated they want their application before CAB to be consolidated with the sprawling New England-Southern States Merger Investigation.

Close sources, however, point out that a National-Colonial hook-up is a major issue in CAB's investigation, and the Board may effect consolidation to prevent duplication in two separate proceedings. Hearings in the New England-Southern States Case begin April 14.

Pioneer Hopes Dwindle On Martin 202A Deal

The deal under which Pioneer Air Lines would secure nine Martin 2-0-2A twin-engined transports for local service operations probably will never be consummated, according to Pioneer's president Robert J. Smith. Appearing as a witness at CAB hearings in the Central Airlines Renewal Case, Smith said there is "no probability" of Pioneer ever getting the planes for reasons "beyond Pioneer and beyond our knowledge."

Plan was for Pioneer to secure the equipment from Glenn L. Martin Co. after they were returned by TWA, which is replacing them with new 4-0-4's. Pioneer, in what Smith denied was a policy switch, intended to use the 2-0-2A's to replace its entire fleet of 13 DC-3's.

The official said his company simply has "outgrown" DC-3's over most segments and needs to secure more adequate equipment. The 2-0-2A deal was favored because it meant delivery this year. Pioneer, he added, has also given consideration to other Martin planes, Super DC-3's, Convairs, and Saab Scandia's, but that earliest delivery date on any of these would be in 1954.

There were no details as to why the Martin deal appeared to have fallen through, although Smith referred to recent financial difficulties encountered by Martin. He said, however, that "we have not abandoned hope" of getting the 2-0-2A's.

A & E Schools Face End Despite Shortage

Thirty-five of the 46 CAA certificated private schools for training aircraft and engine mechanics will close sometime this year, unless drastic action is taken.

Biggest blow to the technical training schools is the phasing out of Air Force training with private contractors, which starts in March.

Four major reasons are blamed by Maxwell M. Balfour, president of the Aeronautical Training Society, for the forthcoming extinction of aircraft tech schools:

(1) Free training available in the Air Force and Navy; (2) Uncertain military draft status of young men; (3) Increased taxes and living costs; (4) growing competition from tax-supported high schools offering A & E training.

Meanwhile, it was learned from Leslie O. Barnes, operations director of the Air Transport Association, that U. S. scheduled airlines will need 1,800 new pilots and 11,000 licensed A & E mechanics by 1954. Military induction was seen as biggest factor behind mechanic need—there is no deferment policy allowing students to finish training school with hope for employment in aircraft industry.

Russia was reported by DeWitt C. Ramsey, president of the Aircraft Industries Association, to be turning out engineers and technicians at the rate of 100,000 a year, compared with this country's peak (1949-50) output of 50,000 and estimated output of 26,000 this year.

This shortage of trained technicians is the one single factor in the U. S. defense production effort which shows no sign of improving, the AIA official said.

JET STARTER is tried out on an F-86E at Andrews Air Force Base. Device is a modified jeep with an air-cooled engine that runs two powerful generators. Unit was demonstrated by Lycoming-Spencer Division of Avco.

Interview

with

C. R. SMITH

President, American Airlines, Inc.

★

Economic Stability-Industry's No. 1 Need

★ ★ ★

About 'C. R.' . . .

SINCE its formation in 1934, American Airlines has flown more than 13,753,000,000 passenger miles. C. R. Smith became president of American Airlines in its first year of operation, is considered personally responsible for the company's growth and prosperity. Today American operates 157 aircraft, all but 13 cargo planes being of postwar design, over some 10,825 route miles. In 1951 AAL operated more than two billion passenger miles and carried over 35 million ton-miles of cargo.

"C.R.", as Smith is known to the industry, started his aviation career in 1928 when, following graduation from the University of Texas where he majored in law and business administration, he joined Texas Air Transport as treasurer. When TAT became part of Southern Air Transport he was made treasurer and vice president of the larger organization.

In 1931, shortly after Aviation Corporation organized American Airways to consolidate a number of smaller companies into one national airline, Smith joined AA as vice president with responsibility for the Southern Division. Drastic reorganization following government cancellation of the air mail contracts in 1934 saw American Airlines succeeding American Airways. In October 1934 Smith became president of American Airlines.

"C. R." spearheaded American's drive for modernized and standardized equipment, still a symbol of AAL's operations, directed opening of the southern transcontinental route and provided the leadership so vital to expansion.

On military leave from American from April 15, 1942, through June 1, 1945, Smith advanced from colonel to brigadier general and major general in successive jobs as chief of staff to Lt. Gen. Harold L. George, head of the Air Transport Command, and as deputy commander. For these war-time activities in Burma and North Africa, Smith won the Air Medal, the Legion of Merit, and the Distinguished Service Medal.

On returning to American in June, 1945, Smith became board chairman, a position he held until January, 1949, when the office of chairman was eliminated and Smith again took over the presidency. Since the start of the Korean War Smith has served on active duty with the Air Force for three months and in advisory positions on a wider scale.

Q. During 1951 the airlines reached the status of a $1-billion-a-year industry. What is the significance of this new stature to the industry itself?

A. Air transportation has become, relatively, a large business. The present capital of the industry, and its annual gross receipts, are now measured in terms of hundreds of millions of dollars.

Air transportation will continue to grow, and the need for additional capital will increase continually in keeping with its growth curve. That would be so even if the price of aircraft should remain reasonably static. The need will be increased by the constantly mounting price of aircraft. The DC-6 cost originally about $600,000. The cost of the DC-6B is about $1,100,000 and the DC-7 will cost $1,600,000. It is probable that the first of the jet transports will cost $2,500,000 each.

Q. Do you see a slackening in financing requirement after the present upswing in equipment orders levels off?

A. American Airlines presently has an equipment purchase program which will approximate $75,000,000, including aircraft and related spares and equipment. That program will need to be paid for by the middle of the year 1954. It is probable that an additional $70,000,000 will need to be committed for equipment within five years thereafter. The total of the reasonably foreseeable equipment requirements for American, within 10 to 12 years, will approximate $140,000,000.

Other members of the industry may develop comparable programs, and it is evident that funds must be provided within reasonable time to finance additional equipment to the extent of several hundred million dollars. Some of this can come from accumulated reserves for depreciation and replacement, but a considerable part of it must come from the introduction of new capital.

Q. Is the airline industry's stature such that it can be sure to get additional capital required for its needs?

A. To secure this new capital, the air transport industry must compete directly with other industries. Its rate of return to the investor must compare favorably with rates available from other investments. There must be reasonable surety of return, and an orderly program for adequate dividends, for those things will be available from other sources of investment and unless air transportation can compete on a basis of reasonable equality it will not secure the capital it will require.

The principal need in the air transportation industry is a continued record of profitable operation, and a reasonable record of interest and dividend payment. Dividends and interest payments can come only from profits, and profits can come only with economical operation and a reasonable rate structure. The industry, and the regulatory agency, must now give attention to that requirement, otherwise when the funds are required the record will not be adequate to attract the investing capital.

U. S. Air Policy

Q. What do you consider to be a sound international air policy?

A. I've been reading about the trans-Atlantic route hearings in *American Aviation Daily* lately and it appears to me that the two experts on that are Damon and Trippe. I should expect that you might get better answers from them. I do think you can say this, though, about our international air policy. I don't think anybody knows what our international air policy is. At least I've never met anybody who knew what it was. I don't think we've done a very good job of setting down in understandable language our objec-

tives in international air commerce on behalf of the United States. I feel it is important to international air transportation that we should have an understandable international policy. It's a basic requirement.

Q. In the past you've indicated a feeling that there is too much competition resulting from paralleling of routes. Could you elaborate on this with regard to mergers and your concept of an ideal domestic trunk line system?

A. Well, I said in a San Francisco speech last fall that the CAB acted rather disorderly for a long period of time and created a lot of competition which certainly at the time wasn't justified and a lot of people paid for it. The government paid for it in increased subsidies and the airlines paid by losing a lot of money. Later they saw the error of their ways through the size of the bills they had to pay, so they started getting a bit more orderly in granting routes and I think that their record in the last couple of years has been better than it was earlier.

The regulatory agencies, like everybody else, are subject to cycles of moods. Let's hope they don't get back to another one of those moods of creating competition for the sake of competition. There are two kinds of competition. One kind is constructive—it creates a better operation in the long run, with some resulting public benefit. There's a lot of competition, however, which is sheer waste.

Q. Is there too much of it remaining right now?

A. Yes, I think so. Of course, some of it has been cured by the normal growth of the business. Some of it's been cured by paying very large amounts out in subsidy. The situation is better today than it was a few years ago and I don't think we ought to worry about it. Let's just keep the mistakes of the past in mind and let's don't do them over again.

Q. Will the airlines be able to maintain their current fare levels in the face of rising costs?

A. If operating costs continue to rise, air transportation rates must keep pace with such increases, to permit continuation of profitable operation, and to secure capital necessary for the continued growth of the business.

Q. Low-fare coach services are being extended all over the place this year. Do you foresee the time when the majority of passengers will be carried in coach services and do you foresee a permanent two-fare level prevailing in domestic service?

A. Yes, I think so.

Q. Do you think the majority?

A. In time. More than 50 percent of our through passengers are coach fares now; that is, people who buy tickets in New York for Los Angeles and people who buy tickets in Los Angeles for New York. We have considerably more schedules at the regular price than at the low fare but (1) the high densities are in the coach services, and (2) the highest percentage of through fares is in the coach services.

Coach Configuration

Q. About this business of stabilizing and having a constant coach operation—do you feel that on the airplanes you are ordering you can afford to put in a coach configuration on a certain number of airplanes and not have provisions for changing from one to the other, or will there always be such fluctuation as to require a convertible interior?

A. Our present program is to modify DC-6's—basic DC-6's—to coach equipment. We have some 50 of those, so we don't run into the problem you're talking about until after we get 50 of them modified, and that's quite a piece down the road. We have no plans at the present time to do any coach business with DC-7's. These are more adapted to high-speed, first-class service.

Q. American's decision to order another piston-type transport, the Douglas DC-7, came as a surprise to many, the feeling being that the next type aircraft for the larger airlines would be a jet transport. What is the background?

A. The DC-7 will be the best, and probably the last, of the large transports powered with reciprocating engines.

We anticipate that the true jet transport will come ahead of the turbo-propeller airplane, principally for the reason that the power plant will be earliest available. It is reasonable to anticipate that a United States jet transport, capable of seating 60 to 100 passengers, dependent on the density of seating, will be flying during the year 1957. It should be available for operating during the year 1958. The speed of the machine, at optimum altitude, should be in the 550-600 mph range. It should be capable of non-stop transcontinental operation, although its maximum range of economy will be between 1,000 and 1,500 miles.

Q. When do you feel the turbo-prop aircraft will be introduced and in what type of service?

A. The turbo-propeller transport will come along later, a couple of years or more after the true jet type. There will be a use for this machine, principally on the shorter runs, around 500 miles, for it will require less landing and takeoff area and it should operate with greater economy for short distances than the true jet.

Cool on Conversions

Q. You say that turbo-jet transports will come ahead of turbo-props. Does that mean you don't think much of the turbo-props we have flying now, such as the one in the Convair Liner?

A. Frankly, I don't think much of this conversion idea at all. We have held very steadfastly to that belief, and I think that when you get into the facts—that when you really get into the turbo-prop or true jet deal—you'd better build an airplane to get the utmost out of those engines. It's obvious that you can put a turbo-prop in a Convair, or you can put either a turbo-prop or a jet engine in a DC-6, but I don't think either one of them would be a very efficient machine. I think in the long run, if you add up the cost of conversion of a Convair, or a DC-6, or a Constellation, with what you get out of it in increased performance, you're going to find it too expensive.

Now a lot of people talk learnedly about the ease of conversion of a Constellation or a DC-6 or any type you want to talk about, to a turbo-prop or a jet airplane, but I think that when you get down to taking that matter rather seriously you will find that the cost of the engines plus the cost of conversion of an airplane as large as a Constellation or a DC-6 might run anywhere from $500,000 to $800,000.

When you stare that conversion bill in the face and look at the increased performance, I think you're going to come to the conclusion that it's not worth while to do the job, and I think you would probably retain your reciprocating engines and use them in whatever service they're useful for, and buy yourself a new airplane.

At least, that's the basis we're proceeding on, and I think it's pretty well supported by facts. I think publicity about the ease of conversion not only misleads the public, I think it misleads a lot of people in the industry, because

'To develop a jet transport . . . $20 million'

they haven't taken the time to sit down and calculate the cost and effect of what they're talking about.

Q. You say that by 1957 there will be a jet transport flying in the United States, by 1958 in scheduled service. Do you feel that this design has already been submitted to the industry or do you feel that the design itself is still some distance in the future?

A. We now have three basic conceptions of jet transport design. We have the Boeing concept, which has engines hung in pods on the wings; the Douglas concept sticking them out in front of the wings like the conventional reciprocating engine; and the Lockheed concept of putting them reasonably in the line of thrust somewhere in the back end and the bottom of the fuselage. Well, all three can't be right. Some one of them must have the best design and I think before the manufacturers spend a great deal of money on their own concept of what the best design is, we'd better get together and form an opinion of the air transport industry, work with the manufacturers to see which we think *is* the best design, and not go off in three different directions. Nearly anybody would guess that to develop a jet transport would cost about $20 million. That's a lot of money and somebody is going to have to pay for it. There certainly should be some way of finding out if the Boeing idea is the best, or the Douglas idea the best, the Lockheed idea the best, or is there a compromise between the three? But there's a great deal of difference really in the basic design of those three airplanes and how to use the power most efficiently.

Q. Do you see the possibility of the industry getting together and trying to form such an opinion?

A. It certainly would be better. We've been trying to stir up a little interest among the principal airlines to get together and have a reasonable specification of what the airlines want without a lot of detail. The airlines are going to have to decide some of these questions themselves.

British Jet Transport

Q. I gather from this that you have no interest at all in the British jets as we know them now?

A. No, I don't think you'll see any in American operation. You might find somebody who would be willing to operate them as a loss leader, but I don't think the economy of the British jet is such that you could make any money with it; consequently I don't think we should have any interest in it.

The United States jets, when they are available, will be considerably more modern and efficient than the British planes of the Comet type. We are forging ahead of the British in jet engine design and it is probable that we will also surpass them in aircraft design by the time of the construction of the first United States jet transports.

Analysis of the present jets, principally the British jets, indicates that they cannot compare in economy of operation with the United States transports powered with reciprocating engines. There will be no widespread use of jets in United States domestic operation until there are substantial improvements in operating economy. That should come within the next five years and the economy should be reasonable by 1958.

Q. It would appear from the number of airplanes you have on order, the extension of delivery dates up until early 1954, and your comments that you expect a jet transport available by 1957, flying, that your next order would be for jet transports?

A. I think that's correct, yes, if you're talking about the next *type*. We may or may not decide to buy some more DC-7's, but I think the DC-7 will be the last of the big transports with reciprocating engines.

Q. With the advent of the turbo-prop transport do you feel the reciprocating-engine-powered transport will disappear from the airline scene?

A. The reciprocating-engine transports will remain useful for many years. It is yet too early to predict that they will be supplanted by jet transports, at any date in the future. Their ability to stay in operation will depend largely on the comparison of economy of operation between the transports with reciprocating engines and those with the jet or turbo-prop engines. The relative economy of the jet-type engines remains to be proven.

New Cargo Planes

Q. On this business of ordering new transports, it appears that momentarily you have cut back on cargo airplanes. You had six ordered but now you've changed it to three temporarily. What is the major factor?

A. The major factor is time. We bought 25 airplanes at $1,600,000 each—that's $40 million—we bought 11 at $1,100,000 each. We just got tired of buying airplanes. They're pretty high. Now, you can buy an airplane or get an option on an airplane—it's the same thing—and I think we'll end up with the same number as we started out with, but we don't have to make up our minds about this yet and it won't have any effect on the delivery date.

Q. The transport mobilization program proposes recall of most four-engined airplanes, yet American appears very dependent on the four-engined airplane. You haven't re-ordered additional twin-engined equipment. Do you feel that your present fleet is adequate for long-range purposes?

A. You've got entirely different operating requirements with the two types of airplane and, theoretically, when airplanes get as big as a Convair or a DC-6, the 4-engined airplane should always be more economical. So on a long-range basis American Airlines is not going to buy any more twin-engined airplanes, except where the type of service requires a smaller airplane than the DC-6.

If you're comparing the efficiency of the four-engined airplane with the efficiency of the twin-engined airplane, the four-engined is sure to win every time. You judge an airplane on the basis of how it will operate with one engine out, which is one quarter of its horsepower on a four-engined plane or 50% on a twin-engined plane.

Q. At what range does the DC-6 come into its own?

A. I don't think you can be quite sure about that yet. I think the base starts at about 200 miles. I think we will need some more experience and some more data to decide which is more economical at 200 miles—the Convair or the DC-6, but after you pass 200 miles the economy of the DC-6 becomes apparent pretty rapidly.

Q. What's your view on local-service carriers? Do you think there's any chance of feeders ever becoming self-sufficient in regard to mail pay, and would you favor expanding them under a continued subsidy program?

A. I've always thought, without doing very much

arithmetic on it, that probably the quickest way to get the feeder lines off subsidy would be to develop an airplane which would operate more efficiently in service. DC-3's have proven relatively uneconomical for any type of service including the one they're using it in. I should think that it would take quite a long time to get any of the feeders on a self-sustaining basis with a DC-3 airplane. Now, how quickly you could get them on a self-sustaining basis with a better airplane would depend a great deal on what the airplane was, but it would seem to me on a pure dollars-and-cents basis that if the government would aid in the development of a better feeder-line airplane, they might get back all of their money and a considerably greater amount than they invested by reduction of subsidy, on a long-range basis.

I doubt that the government would want to adopt the rather hopeless attitude that the feeder lines will never be self-supporting, and I think it would be embarrassing for the people in the business to form that conclusion themselves, so certainly we should do what we can to put them on a self-sustaining basis. There are two big things to be done about that: one is to try to make their routes as logical as possible—though the same thing applies to all air transportation; second is to give them an airplane that's best adapted to that service. I should think that with a better airplane you could have some pretty sound operations.

Airline Mergers

Q. I wonder how you look on this merging of small airlines—some of these small feeders now to bigger feeders—whether or not you feel it is a good move to consolidate them now?

A. It would seem to me that the tests for merging feeder lines should be the same as the tests for merging any other kind of line. There's talk about merging Continental with Mid-Continent. Well, either that gives the section a better transportation system, gives a better route pattern, or it gives a chance of operating economy. In other words, the reasons for merging two feeder systems should be the same as the reasons for merging two trunk airlines. They should both meet the same tests.

Q. Do you foresee a time when all-weather operation will be likely?

A. I think we can improve the regularity right now. Let's take the situation with respect to take-offs. The regulations put out by the CAA on take-offs are such that if you take off with a four-engined airplane and an engine fails you've got to have enough ceiling and visibility to get back on the same airport that you took off from. That, in my opinion, isn't necessary with the reliability you get with a four-engined airplane.

It seems to me that if you've got enough visibility to get the airplane safely off the airport, and mathematically engine failures are so rare, you always have an alternate airport where you can get down. We can increase the dependability of take-offs right now and I'd like to see it done.

Twin engines are somewhat different. You get back to the difference between 25% and 50% power loss, but I don't think there is any doubt that 4-engined take-offs would be much more reliable than they are at the present time.

You've got a somewhat more difficult situation with regard to landing. That will be helped, I think, quite a bit when we get a little better airport facilities. For instance, in the New York area, when we get a long runway at Newark and with the long one at Idlewild you should be able to make landings in much lower ceilings than you could at La Guardia. La Guardia is really a pretty small airport for big airplanes.

We can effect considerable gains on landings as the airports become longer and the approaches better. I think we have been a little slow in taking advantage of the additional facilities we have had in the last three or four years.

Q. Your switching to Wright engines for the DC-7 seems like a pretty major change. Wonder if you have any comments on that? You've been Pratt & Whitney operators for quite a while.

A. Well, Pratt & Whitney has no engines in that field. Pratt & Whitney has no engine that you could put in the DC-7 and get the same speed that you get out of the Wright engine, and in the second place, Pratt & Whitney has no engine to compare with the compound engine, in our opinion, on fuel economy.

The performance record of the R-3350 engines built by Wright has been very good. I anticipate the compound engine is going to be a very reliable engine—I think more reliable than any engine we presently operate. I think the airplane will be faster, the engines will be more reliable, and the fuel economy will be greater. It's no use arguing about the reliability of the Wright versus the Pratt & Whitney engine. With new engines a lot of people start out worrying on the basis that they will not be reliable and as a matter of fact the compound engine is only a compound R-3350 and the R-3350 has had a very good record.

Q. What is the practical aspect of putting this Wright compound engine into the DC-6B?

A. You gain two things that are very important: you gain a very high cruising speed and you gain good fuel economy. That's the most efficient engine ever built.

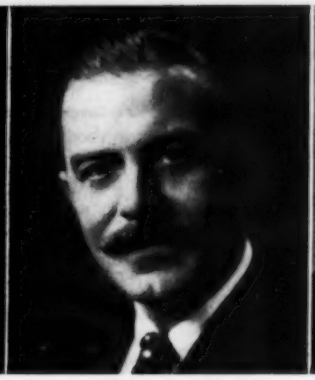
Q. From your experience as an Air Force advisor, did you find any increase of emphasis on transports, so far as procurement is concerned, over a couple of years ago? If this year is starting out with an across-the-board cut-back in defense spending, I was wondering if transports would be the first to go? That would increase your hazard in mobilization.

A. Well, I don't think the Air Force is, or has been, as conscious of the transport's importance in national air power as I have been, which necessarily doesn't make me right or them wrong.

Q. We've been discussing the problem of aircraft noise lately. We were talking to NACA's Dr. Dryden and he holds the view that there is nothing of a practical nature that can be done about it. Do your engineers concur?

A. I don't think we have the answer to that yet. We had several talks with Bill Littlewood last week about it, and he's had several talks with NACA, and I don't think his position is nearly that hopeless. We might be able to discover some ways of cutting it down, not eliminating it. Not only do we need to study that problem with respect to reciprocating engines but there is a greater requirement for study with respect to jet engines. They'll be a lot noiser than the reciprocating engines. I don't think anybody has the answer to it yet, but I think it's too early to say that we won't find any answer for reducing the noise level of the airplane.

O. Roy Chalk



Ben B. Edwards

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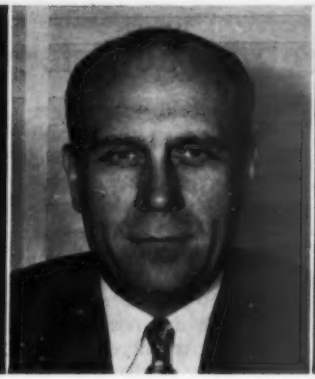

Orvis M. Nelson

Raymond A. Norden

Non-Sked Group Split by Policy Row

Should IMATA play "influence" role in Washington or stick to handling military business for members?

By Eric Bramley

FIREWORKS have been popping over a broad policy statement issued by a non-scheduled-airline association.

One of the members has resigned and another entered a strong protest, claiming that the association exceeded its authority and acted without consulting its members.

The organization, the Independent Military Air Transport Association, touched off the fireworks by issuing a policy statement calling for investigation of "possible improper practices" of scheduled airlines, reorganization of CAB, franchises for non-skeds, an "FHA plan" of government-guaranteed loans for purchase of 100 new planes yearly by non-skeds, and various legislative proposals (see page 23).

Two of IMATA's largest members—Seaboard & Western Airlines and Transocean Air Lines—reacted immediately. S&W resigned; TAL refuted the statement. Both claimed that IMATA should stick to handling military business and stay out of non-sked policy.

There were developments, however, that indicated that IMATA intended to do more than facilitate the handling of non-sked military business. These included:

- **Issuance of the policy statement** by O. Roy Chalk, IMATA president, and also head of Trans Caribbean Airways.
- **IMATA's move into spacious and well-appointed headquarters** at 1025 Connecticut Ave., Washington.
- **Appointment of an executive director,** Ben Edwards, to run the Washington office. Edwards was on leave as vice president of Overseas National Airways.
- **Appointment of Mrs. Ella G. Roller,** formerly with the Democratic National Committee, as assistant to the president and director of research and public relations.

S&W's resignation and TAL's protest were prompted by issuance of the policy statement, on which neither of them was consulted. Raymond A. Norden, S&W president, said he was pulling out because IMATA has embarked, without consulting its members, on a large-scale public relations program "which is entirely outside its avowed aims."

Smaller Operators

It was probable, however, that the rest of the members, who are smaller operators, would have nothing to lose by standing with Chalk and his statement—whether or not he had consulted them about it beforehand.

In releasing the statement at a well-attended press conference (which received considerably more newspaper space than the subsequent actions of S&W and TAL), Chalk left no doubt that he was speaking for his members, and at times seemed to branch out to cover the entire non-sked industry.

He made it clear that S&W joined IMATA "only for the purpose of coordinating traffic for the military establishment and on the understanding that the activities of the organization would be so confined."

Without supporting or rejecting the policy statement, Norden said he emphatically rejected Chalk's authority to commit IMATA members "to any program whatsoever without their prior approval."

Neither had Transocean, another of the 17 members, been consulted on the statement, and Orvis Nelson, president, angrily refuted it, stating that he had joined IMATA only because the military had told him that an association was necessary for the orderly handling of military charters. TAL, he added, has steered clear of "all associations organized for the purpose of influence."

There was little doubt that the actions of S&W and TAL would weaken the IMATA policy statement. In addition, indications were that The Flying Tiger Line, another large member, was no more than lukewarm. How U. S. Airlines stood was not known. The Tigers and U. S. are certificated cargo carriers. S&W and TAL have certificate applications pending.

IMATA's 17 members, he said, operated 146 planes and included every non-sked with more than $1,000,000 invested capital. The weight of this, of course, will be weakened by the S&W and TAL statements.

The investigation, Chalk said, would cover "efforts of the scheduled airlines to distort and use the provisions of the Civil Aeronautics Act to freeze the industry in their own mold and to perpetuate their own monopoly." He declined to elaborate on the scheduled lines' "possible improper practices," asserting that he was not "muck-raking."

He added later that the scheduled airlines are subsidized to the tune of "several hundred millions" yearly, that they are charging the military considerably more than the non-skeds for Korean airlift work, and that he favored the merger of "inefficient airlines with independents who have learned to be efficient the hard way."

There have been reports that IMATA has ample funds to carry on its "public relations" work (Chalk remarked that almost all of his members are operating

profitably). What the CAB might think of this course of events remained to be seen. The Board last year had approved the formation of IMATA, but solely for purpose of military liasion.

There was also speculation as to why the policy statement was issued at this particular time. Some observers thought it significant that its issuance was almost simultaneous with release of the annual report of the Senate Select Committee on Small Business which, although devoting much space to castigation of CAB's attitude toward non-skeds, was critical of non-sked business methods.

How Fireworks Started . . .

These are the principal points in the controversial IMATA policy statement issued January 18:

Plane Financing: Financing by private investment coupled with government guarantees of 20-year equipment trusts, subscribed to by the public and private financing institutions. Under this program, non-skeds would buy 100 new planes a year for five years, provided restrictions on their operating authority are lifted.

CAB Reorganization: Board should be divided into three sections, one dealing with "scheduled subsidized airlines," another with all-cargo lines, a third with "non-subsidized" passenger and cargo carriers. Each section should be charged with fostering maximum development of air transportation.

Subsidy: "Realistic statutory recognition of the fact that the major scheduled airlines are self-sufficient and no longer require government subsidies."

Mergers: There should be legislation directing CAB to compel airlines requiring subsidy to merge among themselves or with self-sufficient lines, "including members of our industry."

Franchises: Legislation should direct CAB to grant permanent franchises authorizing common-carrier operating rights to qualified non-skeds.

Foreign Operations: Legislation should insure participation of non-skeds in foreign passenger and cargo transportation.

Mail: Legislation directing postmaster general to use non-skeds to carry all classes of mail at published cargo rates.

Charter: Legislation reserving entire field of charter operations, except for military passenger and cargo, domestic and foreign, to non-skeds.

Investigations: "Constant surveillance to protect" CAB and other government agencies and officials from "harassment by selfish private interests who may seek among other things to:

(a) "expose conscientious public officials to undue pressure and influence;

(b) "induce public officials to retire from office to enter the scheduled airline industry;

(c) "pad expenses to assure higher subsidy payments;

(d) "withhold aircraft needed by the military authorities in times of emergency;

(e) "use public funds for speculative private ventures;

(f) "inflate costs in military contract operations."

Transocean protests . . .

Orvis M. Nelson, president of Transocean Air Lines, on Jan. 19 issued the following declaration refuting the statement released by IMATA the day before:

"The management of Transocean Air Lines has not seen nor given its approval of the statement of policy released to the press by Mr. Chalk, and Transocean does not sponsor or support such statement of policy. Transocean's membership in IMATA is limited solely to participation of that association in facilitating the carriage of military personnel in the United States.

"Transocean has made it clear to the officers and members of IMATA since the inception of that association that Transocean Air Lines' membership should never be used or be construed to mean that Transocean Air Lines would support or sponsor any legislation or other similar proposals of IMATA, its officers, directors or individual members.

"Transocean Air Lines since its organization in 1946 has remained clear of all associations organized for the purpose of influence, and its sole purpose in joining IMATA was to participate in the domestic military charters field. Transocean joined IMATA only after being advised by the military that membership in such an organization was essential to the orderly handling of military charters."

Seaboard & Western resigns . . .

Raymond A. Norden, president of Seaboard & Western, on Jan. 21 announced S&W's resignation from IMATA with the following statement:

Seaboard & Western Airlines announced today that it had resigned from the Independent Military Air Transport Association because the Association had embarked, without consulting its members, on a large-scale public relations program "which is entirely outside its avowed aims."

Seaboard's resignation was made in a telegram from Raymond A. Norden, president of the company, to O. Roy Chalk, president of the Association, which has headquarters in Washington, D. C. It came on the heels of a statement of policy released to the press by the Association last week asking for a Congressional investigation of alleged "improper practices" among scheduled airlines.

His company and other members of the Association, Norden said, had not been consulted about the program before it was set in motion. Norden declared "without either supporting or rejecting the proposal of Mr. Chalk in whole or in part, Seaboard & Western Airlines emphatically rejects his authority to commit members of the Association to any program whatsoever without their prior approval. Since we joined IMATA only for the purpose of coordinating traffic for the military establishment and on the understanding that the activities of the organization would be so confined, we cannot continue as members in view of the release of such a program without prior approval of the membership."

Chalk clarifies . . .

O. Roy Chalk, president of the Independent Military Air Transport Association, on January 23 issued what he termed a "clarification" of the original statement:

"We regret that two of our airline presidents have indicated that they are not in full accord with every aspect of IMATA's policy statement. However, that statement was derived by representatives of the board of directors after careful consideration of the problems of the industry and we believe it points to a solution of the situation.

"It seems to us from press reports that the issue appears to be whether or not IMATA should call for an investigation of the regular airlines. I would like to make it clear that we do not wish to take part in any investigation. That is the job of government authorities. Nor is it our wish to indulge in any muck-raking. We only pointed to some well-known evils of the industry and these have been referred to in the past by government authorities, including the Civil Aeronautics Board."

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TRANSPORT AVIATION is soon taking another giant step forward.

Two of the world's biggest air transports will be converted to propeller-turbine power, and when they are flying they will be able to achieve greater speeds and greater economy of operation than ever before possible. These aircraft are the Air Force's huge Douglas C-124B Globemaster, and the Navy's new Lockheed R7O Super Constellation.

Both will use the Pratt & Whitney T34 axial-flow propeller-turbine engine rated at 5,500 horsepower. With this rating it stands alone today as *the most powerful single turboprop unit known to be in operation in the U. S. or abroad.*

The T34 Turbo-Wasp will boost the payload of both aircraft substantially over piston-powered versions. In the case of the Navy R7O the payload will increase to approximately 35,000 pounds, and in the Air Force C-124B to about 75,000 pounds.

Along with these increases in load-carrying capacity, speeds for both of these big transports will be very substantially increased. And due to the tremendous power of T34 Turbo-Wasps, both aircraft will be able to operate comfortably from 5,000-foot runways common to both commercial and military airfields.

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Plane Noise Muffled . . . Except for Human Ears

Aero Sonic muffler works fine on decibel meters but ground observers note little difference in sound.

By James J. Haggerty, Jr.

DECIBEL meters are quite impressed by the ability of a newly-developed muffler to reduce aircraft engine noise, but human ears are not. That is the consensus of observers at a recent demonstration of the muffler at New York International Airport, conducted by Aero Sonic Corp., which developed the muffler and which plans to offer it for commercial transport use.

In tests with a Curtiss C-46 at altitudes up to 2,500 feet, the decibel meter recorded sound reductions of a muffled engine up to 41%. But observers on the ground could detect little difference between the noise levels of the muffled plane and an unmuffled companion plane, although the noise of the muffled plane was less irritating, it was agreed.

This serves to confirm the opinion held by Dr. Hugh L. Dryden, director of the National Advisory Committee for Aeronautics (American Aviation, January 21), that there is little of a technical nature that can be done to solve the growing problem of aircraft noise. Dr. Dryden conceded that a muffler can provide some noise reduction, but not enough to soothe the nerves of the irate citizen who lives near an airport.

Noise Like Toothache

A noise reduction of as much as 50%, Dr. Dryden said, would not prove very comforting to the human ear, since the annoyance factors of a high intensity noise and a *very* high intensity noise are not very far apart. It might be likened to the difference between a bad toothache and a very bad toothache: the sufferer is not as much concerned with the degree of the ache as the fact that it aches.

The problem is not so much whether an efficient muffler can be developed as whether the most efficient muffling system in the world will contribute anything to easing the annoyance. In fairness to Aero Sonic, it must be stated that the company has apparently developed an efficient muffler, if the Idlewild tests can be accepted as evidence.

An impartial agency, a New York testing laboratory, recorded the sound volume of the two test planes. The volume was measured in terms of decibels, and readings ranging from 84.5 decibels at 2,500 feet to 103 decibels on take-off were recorded. Decibels are calibrated in threes, that is, a reduction of three decibels means a geometric doubling of the sound level. Conversely, a reduction of one decibel in the meter reading means that the sound level has been cut by about one-third.

Here are the results of the Aero Sonic demonstration at Idlewild showing the decibel reduction achieved by the muffler:

Altitude	Unmuffled	Muffler	Percentage of Reduction
	decibels	decibels	
Take-off	103	102.5	12%
200 feet	103	102	26%
500 feet	95	95	x
800 feet	93	92.5	13%
1,000 feet	94	93	33%
1,500 feet	90	89	33%
2,500 feet	86	84.5	41%

Both test planes were C-46's and both operated at 2,300 rpm and 35 inches of mercury. Thus, the above readings would seem to indicate that Aero Sonic has developed a good muffler, at least as far as the highly sensitive "ear" of the decibel meter is concerned. But the problem is to achieve a noise reduction perceptible to the *human ear,* not the decibel meter.

Final Civil Aeronautics Administration approval of the Aero Sonic muffler has not yet been obtained. Of the 150 flight hours required, 90 have been flown.

The muffler is adaptable to engines up to and including the Pratt & Whitney R-2800 used on the C-46's. Its design consists of a tube within a tube, with a Venturi-shaped tailpipe to induce a jet action in scavenging gas from the muffling chamber. The outer tube, constructed of stainless steel, is insulated with a quarter-inch steel wool blanketing, to permit easy noise absorption. The inner tube is, in effect, a tube of steel wool running the length of the muffler with a perforated outer casing and inside wall. This provides three surfaces of 1,200 square inches and nearly 50,000 perforations to absorb the noise as it passes through the muffler.

One of the objections to a muffler on an aircraft engine has always been the danger of backfire. Aero Sonic claims to have eliminated this danger by use of a connecting vent which draws in fresh air through a small funnel shaped scoop forward of the muffler proper. Piped into the head of the muffler, this fresh air creates a wall of air between explosive fumes which could collect in the muffler and exhaust gases from the engine. The muffler was developed by Eddy D. LaTulippe, general manager of Aero Sonic.

LaTulippe admits that muffling the exhaust is only half the problem of noise reduction; the whirring of the propeller tips, rotating at subsonic speeds, is responsible for about half the total noise volume, the exact proportion varying with the type of engine and the engine-prop combination. LaTulippe is now working on a new development to curb propeller noise. It consists of an attachment to the propeller blades forward of the blades themselves.

Prop Attachment

Purpose of the attachment is to deflect the air against which the blades will strike so that when blade and air come into contact, the air will be moving in the same direction as the blades. This reduces the amount of impact between blade and air so that the blades do not vibrate from the shock of striking the air in their path. LaTulippe claims that such a device will not decrease the efficiency of the propellers.

It is possible that some combination of exhaust muffler and propeller noise reducer might result in cutting the sound volume down to a level acceptable to the human ear. But aeronautical researchers are skeptical of the claims that engine and propeller efficiency will not be impaired.

Dr. Dryden, in his summary of the noise problem, conceded that noise reduction is not an impossibility; it is merely impracticable. Dryden pointed out that, in NACA tests, a muffler on the exhaust system of a 185 horsepower engine has produced good results. He doubted, however, that it would produce comparable results on the high-powered engines of today's transport aircraft.

One problem connected with the use of a muffler is the creation of back pressure, induced by the inability of the exhaust gases to escape through the muffler as rapidly as they are created in the engine. This results in a collection of hot exhaust gases in the cylinders, causing engine overheating. At best this might mean a loss of engine efficiency; at worst, an engine failure.

But even granting the possibility of efficient exhaust muffling, the propeller problem would still have to be met. This, too, is possible, but not currently practical, Dr. Dryden thinks.

SAFIR TRAINER TOURER

another SAAB development

trainer choice of THE ROYAL SWEDISH AIR FORCE

Indicating the confidence placed in Saab products is the recent order for *Safir Trainers* from the Royal Swedish Air Force. Designated Saab-91 B, this trainer is a development of the Saab Aircraft Company's well-known *Safir* 3-seat all-metal tourer.

Faster and sturdier than its predecessor, thanks to the more powerful Lycoming 0.435-A "flat six" engine now fitted, the new *Safir Trainer-Tourer* is equally suitable for military and civil training, and as a personal aircraft. Notable features of the *Safir Trained-Tourer* include: long flight duration (more than four hours), tricycle landing gear, dual instrumentation, and a new Hartzell variable-pitch propeller.

Now being produced under Saab contract at Dordrecht, Netherlands, by the Aircraft Division of the De Schelde shipbuilding company, the *Safir Trainer-Tourer* offers an outstanding combination of trainer efficiency and "big plane" safety.

SVENSKA AEROPLAN AKTIEBOLA GET · LINKÖPING · SWEDEN

What Planes Have Lowest Accident Rates?

Twin-engined aircraft show up better than four-engine types in five-year study of CAB records.

By WILLIAM D. PERREAULT

AN analysis of all air-carrier accidents for almost five years shows that 5.8% of all four-engine aircraft and 4.8% of all twin-engine aircraft have been in some type of accident. Seven of the nine major types have been involved in fatal accidents, only the Lockheed 18 Lodestar and Convair 240 having had fatality-free service in this period.

The record, compiled by the Analysis Division of CAB's Bureau of Safety Investigation, shows a range from seven-tenths accidents per 100 registered aircraft to 14 per 100 aircraft during the period Jan. 1, 1947, to Oct. 11, 1951. The seven-tenths figure is represented by the Lockheed Lodestar and may reflect in part the relatively small utilization of this type aircraft. The Douglas DC-3 is second lowest in its accident rate per 100 aircraft registered, averaging out at four over the period.

Convair Utilization

While the record of the Lodestar may in part reflect exposures, because of the nature of the plane's service, the record of the Convair Liner is of interest in this matter of fatality-free service. More than 100 of these planes are in airline service, all operated at high daily utilization. They have been exposed as indicated in their record of seven accidents per 100 aircraft, yet there have been no fatalities. It is reasonable to believe that inherent design factors in the aircraft itself play an important part in this record. Persons who have studied the Convair record feel strongly that such items as the robust integral fuel tank construction have made this record possible. There have been several Convair incidents which had all the makings of fatal accidents.

Types Compared

The relationship of accident frequencies to twin- and four-engine aircraft is also interesting. It is generally felt that four-engine aircraft are safer than twin-engine ships. This may well be true, and the statistics, misleading, but twin-engine aircraft had an accident rate of only five per 100 aircraft, as compared with six per 100 for the four-engine planes.

It might be noted that during the period covered, twin-engine aircraft registrations ranged between 892 and 1119 for a five-year total of 5,020. The four-engine registrations ranged from 404 to 534 for a total of 2,373. Thus there were some 100% more aircraft in the twin-engine group. It might also be assumed that twin-engine aircraft averaged more take-offs and landings per aircraft because of the nature of their operations, another factor raising the exposure rate.

An appreciation of these statistics demands a definition of what constitutes an accident. For CAB purposes accidents consist of incidents in flight between the time the engines are started to commence a flight and the time when the engines are shut off following the flight which result in fatalities, or in serious injury to the occupants, or major damage to the aircraft.

There were more Douglas DC-3's registered in any given year and for the entire period than any other aircraft, a grand total of 3,586 being registered over the five-year period. This is the aircraft which does not meet transport category requirements and which has been the subject of attempted restrictive regulation for the entire period because of its limited performance. Yet with all these planes operating, the accident rate was four and two-tenths per 100 aircraft. Even this level was distorted by immediate post-war results when the rate was as high as seven per 100. This went down to three and nine-tenths in 1949, two and two-tenths in 1950, and one in the first nine months of 1951.

This particular compilation was made as part of the CAB hearing aimed at reducing the gross operating weight of the Curtiss C-46 as a safety measure. The record did illustrate that the C-46 had relatively high rates, exceeded only by the Martin 2-0-2, but also showed that early 1951 had been a good year for the plane. Over the five years, 12% of the C-46's registered had been involved in accidents, and the accident rate per 100 was therefore 12. This rate compared with 14 for the Martin 2-0-2, seven-tenths for the Lockheed 18, four for the DC-3, seven for the Convair Liner, and six for all four-engine planes.

A better picture of the aircraft participation in accident causes might be had if total plane-miles, take-offs and landings, and other related factors were available. Unfortunately they are not.

First Convair Fatality

The same day on which the accompanying article went to press both the Convair 240 and the Lockheed Lodestar were involved in fatal accidents, accidents taking 34 lives, including five aviation people of note.

American Airlines' Convair 240 accident at Elizabeth, N. J., on January 22, which took the lives of all 23 on board, was the first fatal accident for the Convair 240 and the first fatal accident for American since Nov. 29, 1949. American had operated 4,619,000,000 passenger miles without a fatality at the time of this accident, some 33.6% of the 13,753,000,000 passenger miles flown by American since its formation in 1934.

The Convair 240 is in service around the world and had logged 3,650,000,000 passenger miles service since its first flight in June 1947 and the beginning of 1952. Consolidated Vultee records showed the CV-240 had logged over 840,000 flight hours in this period.

The Lockheed Lodestar involved in the fatal accident was one belonging to Aerodex, an aircraft and engine overhaul firm in Miami, Fla. The Aerodex Lockheed plane was piloted by Benjamin Terry, vice-president of the company, and carried on board Halsey Bazley, former president of All-American Airways, and Herbert C. Fritizche, former AAA station manager and more recently with Aerodex. All five persons on board were killed.

On board the American Convair were George T. Williams, chief of CAA's Navigation Aids Section, and John D. Rice, an electronics engineer in the same section.

Presidents' Meeting Late

The meeting of airline presidents with Defense and Commerce Department officials to discuss the mobilization plan under which commercial four-engined planes would be used by the military in time of emergency originally scheduled for late January, has been postponed to late February or early March.

AIR CARRIER ACCIDENTS--FOUR-ENGINED

DC-4 Aircraft	1947	1948	1949	1950	1951*	Total
No. Registered	285	229	259	249	240	1262
Fatal Accidents	5	3	2	1	1	12
Non-Fatal Accidents	14	17	6	10	9	56
Total Accidents	19	20	8	11	10	68
Percent in Accident	6.7	8.7	3.1	4.4	4.2	5.4
Accident Rate Per 100	7	9	3	4	4	5
Fatalities	172	44	63	58	7	344
DC-6						
No. Registered	73	100	111	121	136	541
Fatal Accidents	1	1	1	0	2	5
Non-Fatal Accidents	4	8	5	4	2	23
Total Accidents	5	9	6	4	4	28
Percent in Accident	6.9	9.0	5.4	3.3	2.9	5.2
Accident Rate Per 100	7	9	5	3	3	5
Fatalities	52	43	28	0	100	223
Constellation						
No. Registered	67	72	82	103	112	436
Fatal Accidents	4	2	0	1	1	8
Non-Fatal Accidents	4	5	3	6	8	26
Total Accidents	8	7	3	7	9	34
Percent in Accident	11.9	9.7	3.6	6.8	8.0	7.8
Accident Rate Per 100	12	10	4	7	8	8
Fatalities	24	31	0	55	40	150
Boeing 377						
No. Registered	1	3	38	46	46	134
Fatal Accidents	0	0	0	1†	1	2
Non-Fatal Accidents	0	0	2	2	2	6
Total Accidents	0	0	2	3	3	8
Percent in Accident	0	0	5.2	6.5	6.5	6.0
Accident Rate Per 100	0	0	5	6	6	6
Fatalities	0	0	0	1†	3	4
Grand Total						
No. Registered	426	404	490	519	534	2373
Fatal Accidents	10	6	3	3	5	27
Non-Fatal Accidents	22	30	16	22	21	111
Total Accidents	32	36	19	25	26	138
Percent in Accident	7.5	8.9	3.9	4.8	4.9	5.8
Accident Rate Per 100	7	9	4	5	5	6
Fatalities	248	118	91	114	150	721

† Crew member fell from aircraft—no aircraft crash.

AIR CARRIER ACCIDENTS--TWIN-ENGINED

Aircraft	1947	1948	1949	1950	1951*	Total
Lockheed 18						
No. Registered	73	90	123	141	153	580
Fatal Accidents	0	0	0	0	0	0
Non-Fatal Accidents	3	1	0	0	0	4
Total Accidents	3	1	0	0	0	4
Percent in Accident	4.1	1.1	0	0	0	0.7
Accident Rate Per 100	4	1	0	0	0	7
Fatalities	0	0	0	0	0	0
DC-3						
No. Registered	804	740	688	671	683	3586
Fatal Accidents	9	7	9	1	4	30
Non-Fatal Accidents	39	47	18	14	3	121
Total Accidents	48	54	27	15	7	151
Percent in Accident	6.0	7.3	3.9	2.2	1.0	4.2
Accident Rate Per 100	6	7	4	2	1	4
Fatalities	73	107	57	16	50	303
Convair 240						
No. Registered	0	14	104	121	121	360
Fatal Accidents	0	0	0	0	0	0
Non-Fatal Accidents	0	7	6	6	6	25
Total Accidents	0	7	6	6	6	25
Percent in Accident	0	50.0	5.8	4.9	4.9	6.9
Accident Rate Per 100	0	50	6	5	5	7
Fatalities	0	0	0	0	0	0
Martin 202						
No. Registered	2	23	25	35	33	118
Fatal Accidents	0	1	0	3	1	5
Non-Fatal Accidents	3	4	1	3	1	12
Total Accidents	3	5	1	6	2	17
Percent in Accident	150.0	21.7	4.0	17.1	6.1	14.4
Accident Rate Per 100	150	22	4	17	6	14
Fatalities	0	37	0	41	10	88
C-46						
No. Registered	13	38	103	93	129	376
Fatal Accidents	2	1	5	3	0	11
Non-Fatal Accidents	2	4	8	9	11	34
Total Accidents	4	5	13	12	11	45
Percent in Accident	31.0	13.1	12.6	12.9	8.5	12.0
Accident Rate Per 100	31	13	13	13	8	12
Fatalities	5	2	95	30	0	132
Grand Total						
No. Registered	892	905	1043	1061	1119	5020
Fatal Accidents	11	9	14	7	5	46
Non-Fatal Accidents	47	63	33	32	21	196
Total Accidents	58	72	47	39	26	242
Percent in Accident	6.5	8.0	4.5	3.7	2.3	4.8
Accident Rate Per 100	6	8	4	4	2	5
Fatalities	78	146	152	87	60	523

* To date—October 11, 1951.

NOTE: Excludes fatalities to persons on ground.

Prepared by Analysis Division, Bureau of Safety Investigation, Civil Aeronautics Board

U. S. Customs-Checks Run Outside Country

AMERICAN AIRLINES is currently carrying the first international passengers to undergo U. S. customs and immigration checks outside the country before starting their trip. The pre-flight clearance inspections are being tried on American's passengers on its four flights daily from Toronto, Canada, to Buffalo and New York. The plan, which was put into effect Jan. 14, is under a three-month trial through the cooperation of the U. S. Customs Service and the Canadian Government for a test in eliminating the usual 30 to 60 minutes of customs delay at the end of the flight between the two countries. It is being closely watched by both government and airline people.

U. S. immigration examinations have been in effect at Toronto since April, 1950, but such pre-clearance saved little or no time and red tape for passengers since customs inspection was still required in New York. Now, however, U. S. customs examination is carried on at Toronto. The question of how much time actually is saved for passengers is still moot though, since they must check in earlier at Toronto. But a 10- to 20-minute time saving is hopefully expected.

Easy Clearance

Immigration clearance is relatively easy but customs presents a few complications. Neither U. S. customs nor immigration inspectors have the right or power of arrest within Canada. There is also the technical question of collecting duty when, in fact, the duty-taxed articles have not entered the U. S. And U. S. Customs still requires the carrier to file all necessary papers at each entry point and maintains the right to require a re-check in the U. S.

If the Toronto experiment succeeds, however, the pre-clearance plan may be extended to other cities in Canada and perhaps in Mexico. Pre-clearance in European cities is remote, although the International Air Transport Association has urged that the process be instituted at such major traffic centers as London and Paris. The plan has the endorsement of both ICAO and IATA.

So far American Airlines is the only company authorized to provide the service from Canada to the U. S. If the experiment proves successful, however, other airlines will probably receive authorization for similar services.

Ernest Salisbury, district director at St. Albans, Vt., is in charge for the U. S. Immigration Bureau, and Burke Flynn is the air coordinator for the U. S. Customs Bureau.

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Not least among the reasons underlying owners' preference for planes with Continental power is the fact that Continental—and only Continental—provides the backing of established service wherever they may choose to fly. The need for such facilities is held to a minimum by sound engineering and rigid quality controls in manufacture; but even so, it's reassuring to know that you're never far from genuine parts and competent mechanics.

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Spherical container has duel outlet.

Convair 340's Use C-B, Anti-Fire Fluid

THE new Convair 340's, now rolling off the production line at Consolidated Vultee Aircraft Corp. for delivery to some 10 domestic and foreign airlines, will use chloro-bromomethane, or C-B, as a fire extinguishing agent instead of carbon dioxide. While several executive-type Douglas DC-3's have been equipped with C-B, the 340's will be the first commercial airline aircraft to use the new extinguishing agent.

Chloro-bromomethane has been specified by the U. S. Air Force for all new aircraft and in one instance for installation in an older operational aircraft. C-B is considered to be more effective as an extinguishing agent than CO_2 and to provide a lighter installation. In the case of the Convair 340, it will permit a weight saving in excess of 125 pounds.

Walter Kidde & Co., of Belleville, N. J., is the primary equipment supplier for the C-B system, supplying storage cylinders, controls, valves, etc. Kidde does not supply the chemical; C-B is manufactured by Dow Chemical, Michigan Chemical Company, and several other chemical producers.

C-B Properties

C-B is a colorless liquid with a boiling point of 150 degrees Fahrenheit and a freezing point of minus 123 degrees F. It has a vapor pressure that does not vary greatly with temperature change, a factor which, in combination with low initial storage pressure of 400-440 p.s.i., permits use of standard thin-walled tubing rather than the heavy-walled tubing required for a CO_2 system.

In the CV-340, two 630-cubic-inch spheres, each with a capacity of 22.50 pounds of chloro-bromomethane, are used. These are charged to 400-440 p.s.i.

pressure with nitrogen. Mounted in the left-hand wing fillet, they are readily accessible through a door in the lower surface of the fairing.

The C-B container incorporates a built-in pressure gauge, a temperature safety seal—which relieves at 208 to 220 degrees Fahrenheit—and an electrically operated discharge bonnet, thereby eliminating stop valves and welded manifolds.

The system affords protection for the accessories compartment (zone 2) and the wheel well (zone 3), a tube routing directly through the wheel wells to the accessory section of each nacelle. A small line is routed to the fire door in the chimney.

Double-check "Tee" assembly

The carburetor will not be protected as Convair advises operating experiences indicate such provisions are not necessary. Protection for the oil cooler is regarded as unnecessary because it is installed outside of, and is protected from, the affected zones.

The accessory section distributor ring has sixty-four .055 diameter orifices and the wheel well distribution ring has 137. The closer spacing is described as emitting a fine spray of the agent for effective fire extinguishing in all areas of zones two and three.

Safety Valve

Each bottle, one main and one reserve, has a port and a firing cap for No. 1 and No. 2 engines. The system also has two double-check "Tee" valves to prevent the pressure of the bottle that is being fired from backing up in the line and causing possible discharge of the other bottle.

The C-B is discharged by an electrically-initiated detonation. Each container has two discharge valves, one directed to each nacelle by a single electrical impulse. The extinguishing agent in either container may be discharged through a simple check valve to the desired area.

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Two pressure switches, one in each section of the system, serve to operate indicating lights on the fire-control panel in the flight compartment. The available agent in the bottle is shown on a pressure gage on the container in the wing fillet.

Bonnet assembly

Convair gives these advantages as reasons for using C-B: low weight at twice the protection is realized; solenoid-actuated discharge and directional valves are eliminated; the complete fire-extinguishing system is located outside the pressurized area of the fuselage; systems installed in military aircraft have proved highly satisfactory.

Recharging

The fire equipment industry, it was said, will have recharging facilities available at all important stations at the time of delivery and acceptance of the first Convair-Liner 340's. The Convair Turboliner now being tested by Allison division of General Motors utilizes C-B.

Some other pertinent facts about C-B:

- **It is more expensive than CO_2,** costing an approximately 75c per pound as compared to under 10c for CO_2.
- **The USAF does not consider C-B toxic** but CAA considers it has an anesthetic effect, requires that the cockpit be suitably sealed against possible entry of fumes.
- **In a liquid state C-B can corrode,** possibly eat through, aluminum lines under certain conditions. Consideration is being given to venting fittings in the low sections of lines where C-B might possibly accumulate.

4-0-4 Begins Service

On January 15, Trans World Airlines inaugurated the first scheduled airline service using Martin 4-0-4 aircraft. Eighteen of 103 Martin 4-0-4's on order have now been delivered, nine to TWA and nine to Eastern Air Lines.

The 40-passenger Martin 4-0-4, powered by two Pratt & Whitney R-2800 CB-16 engines, has a gross take-off weight of 43,650 pounds.

Do the Airlines Lack Promotion Policies?

College transportation heads say they do in replies to airline personnel managers.

This Started the Battle

LAST issue we posed a problem presented to us by Gilbert L. Gifford, associate professor of transportation at the University of Tennessee, Knoxville. Professor Gifford said the airlines were not showing as much interest in picking up his college graduates this year as were the railroad and motor truck industries. He wondered why. And his students—majors in air transportation—were wondering if they would be able to get jobs with the airlines.

We sent the problem to eight leading personnel directors of airlines, and published their answers last issue. In general they seemed to feel that too many college graduates were "unwilling to start at the bottom" and work their way up.

Now we have a rebuttal not only from Professor Gifford but from other top transportation educators in which several point out that the airlines are weak in employe training programs and fail to give advancement opportunities to those who do start at the bottom. Their comments make for good reading. We invite others to contribute their thoughts.

The Colleges Fire Back

Gilbert L. Gifford, associate professor of transportation, University of Tennessee, Knoxville:

Your symposium "Are Airlines High-Hatting College Grads?" was read with great interest by members of the staff and students in the Air Transportation class at the University of Tennessee. The information and advice contained will be of especial value to the students who anticipate going into airline work. I personally appreciate the time taken by my friends in the airline industry in outlining their thoughts on this subject which is of such vital importance to us.

Gifford

In studying the replies from these airline officials in which they explain why they do not hire more college graduates who have majored in air transportation, we cannot help but notice one point made by most of those answering, "they are not willing to start at the bottom." The members of the staff of the Department of Transportation & Public Utilities at the University of Tennessee have all tried very hard to prevent the students from getting the idea that they are going to get jobs as executive vice presidents of an airline upon graduation. Since 1949 seventeen University of Tennessee graduates have gone to work for airlines and without exception have started at the bottom. Our students are repeatedly given to understand that they must expect this but they are also told that, with the training they are getting, they should be able to advance faster than the man who does not have that training.

However, this is not the case in many airlines, as promotion is too often based upon time alone, and a college graduate starting out with a high school graduate will find himself right along with the other man at the end of two years. At any rate, he is not given to believe that he has any better chance, when he is interviewed for a job. Another reason why our grads are going to the trucking industry and into industrial traffic work is the starting pay, which is not less than $230 and has been as high as $350 in some cases. Along with this is better promise of promotion than the airlines offer. Can it be that the airlines are missing some good people from which to choose their junior executives in the future by setting their starting salaries too low? Can this also be a factor in assisting the airlines to maintain that high level of personal service which has always set the airlines off from other forms of passenger transport?

Mention was made of promoting from within their own organization and I am sure that all airline officials today realize that in order to secure administrative material from within their own ranks, their personnel must have more than a high school education. In all phases of industry it is becoming recognized more and more that a broad business background is necessary for proper management and that is particularly true of an industry that is growing and changing so rapidly and has so many problems. In seeking to solve this problem, many truck lines, some railroads and at least one major airline to my knowledge have set up a training program for junior executives, and it is significant that they choose the highest caliber college graduates that they can find.

Although you printed no replies from airport managers, it is my belief that many cities are becoming conscious of the importance of a good sound business training in their airport managers and will be looking more and more to the colleges to provide them.

We in college work appreciate this chance to discuss these problems and believe that a much better understanding between educators and industry results from such a forum as made possible by Wayne Parrish of AMERICAN AVIATION magazine.

The University of Tennessee is attempting to give the student what industry wants him to have in the way of specialized training based upon a good business and liberal arts background. We are interested in getting any suggestions that the airline officials wish to offer to help us meet the needs of their industry.

•

Maxwell W. Balfour, Spartan School of Aeronautics, Tulsa, Okla.:

I spent an interesting half hour reading the comments of airline personnel directors.

Balfour

I think it's a common problem in times of full employment. It's difficult also for the manufacturers to get enough engineers because there's too much competition.

I don't feel quite competent as the operator of a technical school to comment on this particular situation which is between the airlines and institutions of higher education, (*Continued page* 36)

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I'd like to suggest that you get the comments of the colleges themselves, particularly on the point that their graduates don't like to start at the bottom. I think that that would make very interesting reading and I'd like to see what they say about it.

•

Harold D. Koontz, School of Business Administration, University of California, Los Angeles, formerly executive assistant of Trans World Airlines:

Koontz

Having only recently returned to academic life after a number of years in the aviation industry, I am naturally interested in the comments of airline personnel officers on Professor Gifford's question. I have a feeling that the airlines are falling into some of the personnel selection practices which so long characterized the railroad industry and which, I must say, some aggressive railroad managements are changing so successfully. In other words, many airlines which, when small, so attracted college graduates are not attracting them now.

The reason for this is, in my opinion, the lack of a developed trainee program in most of the airlines, a program which recognizes that effective management is the priceless ingredient of any business and that this kind of management does not often "just happen." I recognize that the airlines may be giving more thought and attention to this kind of thinking than I realize.

A few of the airline comments indicate that some of them have an informal, if not a formal, program of selection and training of future managerial manpower. Nevertheless, how many of the airlines have studied the selection programs of some of our most successfully managed industrial concerns who yearly make it a first order of business to select a few college graduates and place them in a program designed to make future managers? How many airlines can show a good college graduate (whether he specialized in transportation or some other field) that they have a program which will give him a chance to receive training and which *may* qualify him for promotion to managerial jobs?

While it may be argued very logically that a man should be willing to accept his chance in any organization, the better college student is likely to be impressed with a company which recognizes the importance of the development of management, whether through a formal or an informal training program. Since so many industrial companies can show a top notch graduate that, if he delivers on the job, he can expect promotion, these companies are likely to receive the cream of the crop.

I have a great deal of sympathy with the personnel officers who criticize college students for their unwillingness to start at the bottom. On every occasion I can I impress students with the importance of their starting at the bottom. I have emphasized to them that, while a good college student must have some training and qualifications which should later make him a good executive, he cannot expect to be placed in any kind of an important position in a company until he has been trained and has shown his ability to assume responsibility. I believe that most good college students today understand the importance of this and are willing to accept it.

However, it is expecting perhaps too much from any intelligent and ambitious young man to ask him to start at the bottom unless he feels that the company has some plan and program for giving him an opportunity if he deserves it. I realize that some airlines have been thwarted by union seniority provisions and pay scales in adopting a good trainee program. At the same time, I suspect that most of the union executives would cooperate with an airline in developing a good program if it were properly presented to them.

•

Joseph E. Coulter, chairman of Department of Aviation, University of Oklahoma, Norman:

The views expressed by the personnel directors of the air transport industry are only too familiar to those of us who have attempted to promote aviation training in colleges and universities.

While each of these men expressed the desirability of college training, apparently they are convinced that college graduates are not needed because: (1) the job openings are in the lower positions due to the policy of promotion within the ranks; (2) college degrees are not an educational requirement since the necessary skills for these beginning positions may be learned during short, intensive company training courses.

The airlines mildly deplore the college graduate's reluctance to "start at the bottom" and "be content" in these menial positions. This reluctance is understandable after several years of counseling students and discussing with them their job prospects upon graduation. Our graduates who have majored in aviation administration are consistently offered starting salaries almost $1,000 a year higher by other industries even though they are particularly interested and trained in aviation. These industries range all the way from soap makers to oil producers.

The airlines are admittedly not too particular in choosing their new employes since they will receive in-service training for the particular position, yet it is from these same employes that they say they will choose their future administrative personnel. It would seem that such a policy would tend to perpetuate mediocrity within the industry.

An old criticism of the railroads has been that they are better at operating their trains than they are at handling their business problems. Many believe this is a direct result of their practice of promotions within the ranks of their operations people. Is the air transport industry going to follow the same pattern, becoming known for its backwardness and lack of imagination?

Colleges and universities feel it is their responsibility to supply industry with trained minds. In the case of the aviation industry their need was anticipated and aviation curricula were instituted to give advanced training in aviation and its related subjects.

Unlike other major industries, the air transport industry has not found a need for our product. In airport management the need is certainly great but, in many instances, political considerations clearly outweigh personal qualifications when appointments are made. This leaves the aircraft manufacturing industry which is already being adequately supplied from our regular business and engineering graduates.

The peculiarity of the air transport industry in "not needing" college trained personnel as exemplified by their own statements as well as their salary scales make it stand out among the other industries which constantly seek our graduates. It makes one wonder if the airlines feel that "everyone is out of step but our Johnny."

•

John H. Frederick, professor of transportation, University of Maryland, College Park:

Frederick

In my own experience covering a period of nearly thirty years of teaching transportation subjects, I have found the airlines much more receptive to college men and women than the railroads, motor carriers or water carriers provided the graduate has been willing to start at what the airlines can pay. I have never had any trouble in placing a graduate, man or

Reprinted from American Aviation Magazine

Extra Section by William D. Perreault

While attempts at standardization of airline equipment have been generally unsuccessful, we find one prominent exception to this. Last summer in a 9,000-mile tour around airline bases in the U.S., and last month in a tour of airline bases in Norway, Sweden, Denmark, Finland, England and Ireland, we found Greer Hydraulics, Inc., testing machinery everywhere we visited. Everyone has a good word for Greer equipment.

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William D. Perreault, widely-read correspondent of *American Aviation*, knows that standardization of airline equipment is more important now than ever before, which is why he tosses Greer an orchid in his December 10th column, reprinted in part above.

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woman, who really wanted to get into air transportation. I believe that the ratio of college graduates to the total number of employes in the airlines is higher today than in any other form of transport.

It is true that one used to have many more airline representatives visiting college campuses directly after the close of the war than do so now, but that was the expansion period and most airlines now find themselves quite well staffed and have wisely adopted the promotion-from-within policy. The only jobs now open are, therefore, usually in the lowest salary brackets which do not appeal to men or women who have invested a considerable amount of time and money in their education, or had it invested for them.

Under present circumstances the airlines have naturally given up college recruiting. The two which visited the Maryland campus last year failed to get a single man.

The attitude of transportation students towards commercial aviation as a career has also changed. I remember when men would start at *anything* just to get into the industry. Back in 1939-40, for example, airlines were paying less than $100 per month to start and my men were taking the jobs. Some of them who stuck it out are now quite well up in the industry but they had the spirit. Our graduates today, with rare exceptions, do not have this spirit. Perhaps air transportation has become too commonplace, which of course from the point of view of the industry is all to the good.

As the years have passed I have seen greater competition for college graduates with a major in transportation. Today a transportation major has a chance to go not only with one form of carrier or another but with industries in traffic management, with trade and commercial associations, or with the government in one of the agencies dealing with transportation. Nearly always the starting salaries, particularly with the government and in industrial traffic management, are a good deal higher than the airlines pay to start.

There is also the general overall competition for college graduates with a B.S. from all lines of business, the armed services and government agencies, so that a transportation major, disappointed with starting salaries in his chosen field, may take some other job. For example, within the last year or so many of my best men have gone with the FBI at around $5,000 per year, which is way ahead of anything any industry could pay to start.

Another aspect of the placement problem today is that many of our more recent graduates are older than they used to be. Mostly these are veterans finishing up on the "G.I." program. Quite a few of these men are married and with children. They have been receiving as "G.I." subsidy from $105 to $175 per month, depending on the number of children. In addition most of them have been working on the side and their total "income" has exceeded what the airlines want them to start for at full time.

The wives too have often been working, just holding on until the husband graduates, and their idea is that the college degree is something that will open up a new world of income. (Where they got it I don't know but they have it.) Therefore anything less than $300 per month looks slim to these people and with pressures the man will often abandon his major field and go where there is more immediate money. This is too bad but I don't know what can be done about it.

•

Leslie A. Bryan, director of Institute of Aeronautics, University of Illinois, Urbana:

The problem which Professor Gifford raises is one which has been of concern to me for a number of years and I have read the comments of the airline people with much interest. Indeed, the placement situation has been such that we have never offered a degree here, as some other schools have, in airline management and operation.

Bryan

We have felt that it is better to graduate a student with a degree in business administration and let him elect two or three courses in transportation economics, including one in airline operation, rather than graduate him with a degree that is more specialized. This conclusion has arisen out of the desire to avoid misleading the student as to job opportunities and because we have felt that a broad college training plus the in-service schools and training of the airlines was a safer educational procedure.

We have taken the responsibility here, as far as possible, for also explaining to the students the fact that the airlines are a relatively small industry employment-wise, that beginning salaries are lower than in many other businesses, and that seniority practices are a factor to consider. We give them, also, the facts on airline officers' salaries to complete the picture from bottom to top.

In addition, we attempt to provide interviews for our graduates with as many airline companies as they may express an interest in, together with such specialized knowledge of the particular company as we might have. In short, we try to give our students as fair a picture of airline employment as we possibly can in justice to both airlines and students, and then let them work it out together in cases of mutual interest.

There is much truth in the comments of each of the letters you have from the airlines. Certainly we in university education should shoulder more responsibility than we have in the past, particularly with regard to providing prospective traffic personnel. Here at the University of Illinois, each year we normally provide the airlines with some aeronautical engineers, A. and E. mechanics, co-pilots, stewardesses, and business administration graduates. We would like to provide more in each category.

Airlines simply are not now getting our best graduates. Mr. Harris of TWA gave the reason in his reply to your query when he wrote, "They turn to business openings which offer them a higher starting salary." Our experience here bears him out with the exception of stewardesses; we hear no complaints on the salary question from them.

The answer seems to me to be that, as far as the type of personnel in which Professor Gifford is interested, we haven't turned out a good enough product to cause the airlines to seek our graduates and to pay the money necessary to get our best. A re-evaluation by both airlines and universities is in order. I suspect that Professor Gifford's question and your follow-up may start all of us making such an evaluation. I hope such is the case.

•

Niels C. Beck, dean of Parks College of St. Louis University, East St. Louis, Ill.:

The now threadbare observation by educators that the airlines are not interested in air transportation "majors" undoubtedly provokes some yawns in airline circles.

On the other hand, the colleges offering such training have grown equally tired of cliches to the effect that "everybody in our airline must start at the bottom and work up."

This does not overlook the fact that more and more of our young people come out of a pre-college environment in which they have apparently been taught that the world owes them a living. It is a difficult task, in the short years of college, to knock this idea out of their heads, and at the same time give them the fundamental tools in

theory and in fact which will supposedly result in their becoming superior individuals and leaders.

It seems to me that the most straightforward statement was made by Mr. Glotzbach, vice president of Northwest Airlines, when he said that "since it is the general policy of the industry to promote from within, and other things being equal, to give recognition to length of service, college graduates as well as others must accept the fact that it may be years before they reach their final goal."

Even this is an understatement. All too frequently the organizational structure of most airlines today retards the advancement of men with superior training.

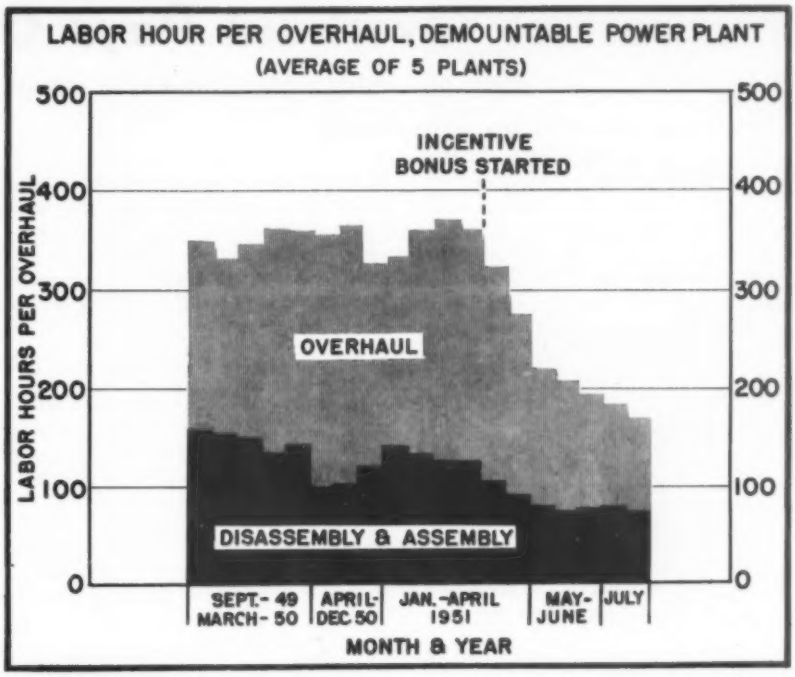
Aside from technician and specialist training, higher education should, and in many cases it does, produce a graduate who has acquired habits of accurate and analytical thinking that are of great value to any employer.

The fundamental disciplines in the sciences and the arts are designed to accomplish this. Obviously they may not, and the college graduate must be judged according to his performance along with other employes. But the fact remains that all too often the airlines offer the college man a starting job at exactly the same salary as some applicant they have taken off the street, and then paralyze his ability and enthusiasm with a slow and unrealistic schedule of promotions and salary increases.

Parks College has taken a step which it is believed will offer some relief. We have formed an Industry Committee on which representatives of every activity in the industry are members. Our first meeting gave us an insight into many employment problems we had overlooked or underestimated, and I am sure that the committee members went back to their jobs with a better understanding of the problems of the school and its students.

We plan to hold these meetings twice each year, and by working with men from a policy-making, or near policy-making level, it should be possible to get action when a point of agreement is reached. Curriculums, research, job security, unions, wages, salaries, and skill will all be discussed and argued from both sides of the fence.

We expect great things of our committee. It seems to us that the chasm that lies between the college graduate and his job with the operating airlines is mainly the result of lack of attention, on both sides, because everyone has been too busy, too preoccupied with the work in his own little bailiwick to sit down and work the thing out.



SHARP REDUCTIONS IN MANHOUR requirements for engine overhaul are reflected in this SAS chart showing time required before and after bonus eystem was introduced for this operation. Manhour expenditure went from 350-375 hours per engine in 1949, prior to the start of the system, to a figure roughly half as much in July of 1951. Consequent savings more than offset the higher wages which resulted from introduction of the system.

Operators Win First Round in C-46 Fight

FIRST ROUND in the non-scheduled airline industry's fight to prevent the Civil Aeronautics Board from reducing the maximum allowable gross operating weight of the Curtiss C-46 has been won by the C-46 operators. The decision is apparent in the form of a CAB Examiner's Report, a 150-page document compiled by S. Thomas Simon and outlining the findings of fact on which CAB will later act.

Meets Part 3

The Curtiss C-46, the report states, meets the performance requirements of Part 3 of Civil Air Regulations, the regulations under which it is operated by the non-scheduled airlines in passenger-carrying operations, and no justification exists for reducing the gross operating weight. This finding contrasts sharply with the CAB-proposed ruling which would reduce the C-46's gross operating weight from 48,000 pounds to 43,500 pounds in two successive steps.

"Inaccuracies in CAA tests" of C-46 performance are cited by Simon as the principal cause for the misunderstandings which led to issuance of the proposed ruling. The examiner discards CAA's claim that the C-46 has "one of the worst accident records of any airplane engaged in carriage of passengers" and notes that the weight problem does not appear, to be the basic reason for the plane's actual record of 44 accidents.

While nine of the 44 accidents are in theory related to the weight problem and C-46 performance with one engine inoperative, the facts also show that errors in pilot judgment or technique were also involved in these accidents. The record does not show that the C-46 has proved "inherently deficient in performance."

Some of the major findings made by Examiner Simon, reflecting on the quality of CAA's C-46 performance tests, include:

- **It is evident that the flight test** results have not been checked as thoroughly as they would have been under a certification flight test program.
- **Some of the flight test methods** and techniques used by CAA were not in strict conformity with regulations or acceptable practices of CAA's own manuals.
- **CAA tests were conducted** at low gross weights and performance extrapolated to 48,000-pound gross weight, far beyond the limits of good engineering practice.
- **CAA's tests in climbing** conditions were not proper nor adequate to obtain basic rate-of-climb data.

Progressive Overhaul Pays Off for UAL

First description of United's plan hails 14% cut in labor costs, sharp drop in turnover.

PROGRESSIVE overhaul of its four-engine aircraft fleet has paid off for United Air Lines, according to F. A. Page and S. L. Bergen. Speaking before the Society of Automotive Engineers during its annual meeting in Detroit in mid-January, Page and Bergen summed up the case for progressive overhaul with these facts on UAL's DC-6 experience:

- **During the first cycle** of overhauls it saved about 6% on labor and in the future is expected to save about 14%.
- **By minimizing peak work loads,** it eliminated the need for four hangars and docks that would otherwise have been required, a saving of some $2 million.
- **By keeping planes out-of-service** for maintenance activities to a minimum, progressive overhaul made available four airplanes that would otherwise have had to be obtained through lease or purchase at about $4 million.

United's decision to adopt progressive overhaul in place of the older and more widely used minor-and-major overhaul program was forced by the economics and operational problems of introducing a large post-war fleet of planes within a very short period of time. United introduced 39 Douglas DC-6's into service in three months' time.

Once adopted, progressive overhaul proved so successful that it is now used on all of United's 50 DC-6's, six Boeing Stratocruisers, and 23 Douglas C-54's. Only the DC-3 fleet, numbering 56 aircraft, is not under the progressive overhaul program. All overhaul work is done at United's push-button maintenance base in South San Francisco.

Problems

Introduction of 39 new DC-6's into service within three month's time presented some real and challenging problems. These planes would accumulate service time at about the same pace. In the early months engine overhauls and other major operations would be closely grouped. As time went on they would all require major overhauls, at the overhaul period designated in the operating specification, at approximately the same time.

This would rob the operating fleet, overload the shops, and present an almost impossible manpower problem. Holding planes out of service to provide logical sequencing was totally impractical. It would have taken three years time to introduce the DC-6's according to a convenient maintenance and overhaul schedule, about one a month.

Eight Periods

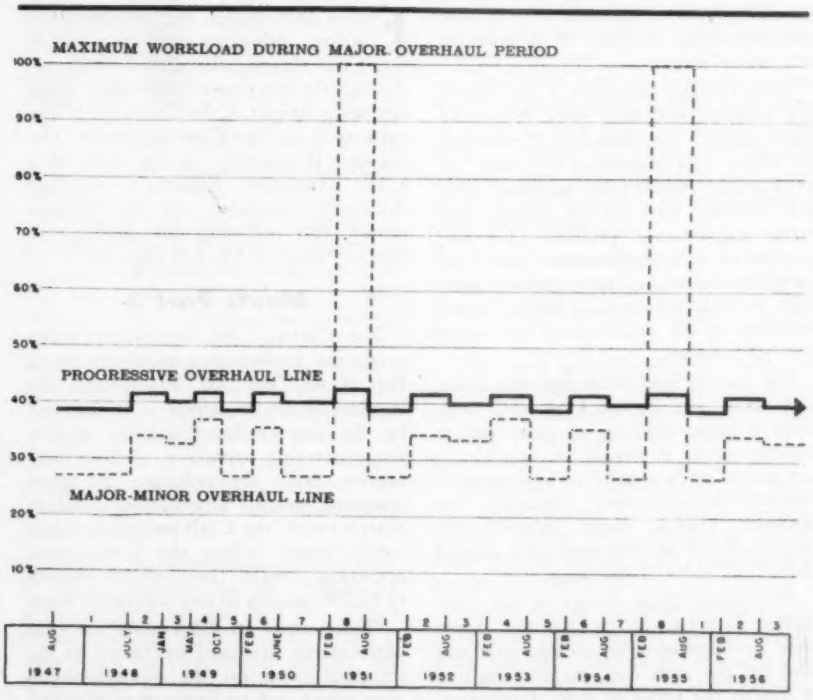
Until this time UAL had used seven minor and one major overhaul periods during the operating cycle of the aircraft. Work done during each overhaul period was dictated primarily by approved overhaul times on the components. Workload per overhaul varied about 350% between the smallest minor and the major. Shops had to be staffed to meet an abnormally high level of work. Even so, major overhauls were preceded by stepped-up employment and followed by a reduction in forces and resultant morale problems.

Progressive overhaul redistributes the workload caused by inspection, replacement, and reconditioning of aircraft engines and related components. UAL started its program by establishing a record of all maintenance and overhaul jobs, setting up appropriate manhour expenditures for each (initially on the basis of work estimates), and finally rescheduling all work to fit into new overhaul patterns. Eight overhaul patterns are now used but each is made up of approximately the same manhour requirements.

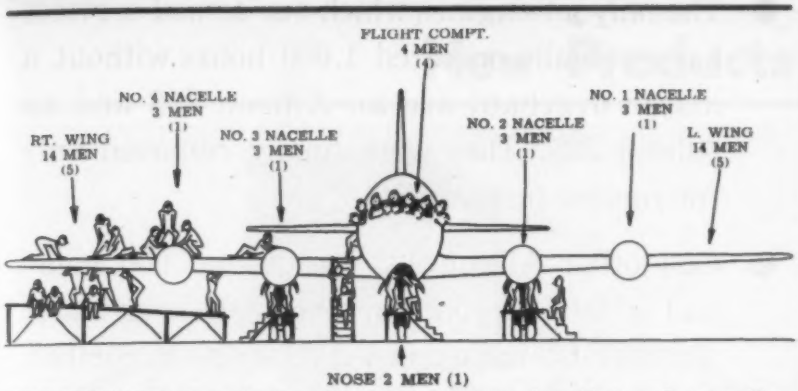
This re-evaluation and rescheduling of work provided another advantage. Jobs were scheduled in such a manner that manpower was distributed in a more practical manner. Major overhaul of the DC-6 in the old style would have placed 10 men in the flight compartment, an impossible working condition (see drawing). Rescheduling cut this down to four men. The same ratio held true in many cramped areas.

Work Loads Vary

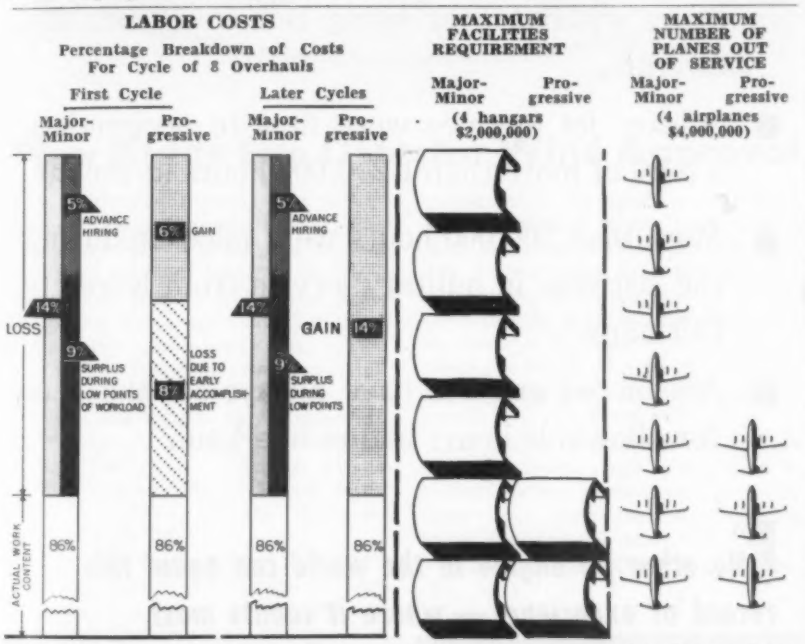
Even with set inspection and overhaul items scheduled into the eight overhaul periods making up the cycle, work loads are not constant. This is the result of unpredictable work, engineering change orders, and special test installations. These are taken care of by "Advanced Planning Units" located at the work dock. Here trained job planners schedule these functions in with routine



RELATIVE WORKLOAD in UAL's San Francisco base shows actual variation, experienced and projected (solid black line), versus peaks which would have occurred had the old-style overhaul program been used.



RESCHEDULING of overhaul work reduced congestion in critical work areas. Here United shows relative congestion, with figures in parentheses illustrating lesser requirements of progressive overhaul over earlier minor-major system.



END RESULTS of United's progressive overhaul program, as applied to DC-6's, shows immediate labor saving of 6%, future saving of 14%, reduction in number of hangars and docks required to do the job, and relative availability of planes for service under both systems.

work to assure a minimum disruption of schedules and manpower.

End results of this planning are best represented (see chart) by the very small variation of workload in the UAL shops month to month. Under the minor-major plan previously used for United's overhaul, the day-to-day personnel requirements would have been only 35% of those required for the intermittent and short-term major overhauls. This is the peak which always kept employment above current needs, forcing prehiring preceding majors and layoffs following overhauls.

Since introduction of the progressive overhaul plan in 1947, United's manpower requirements have leveled out at what it would have been the 40% level. In addition to cutting the short-term peaks, which would have soared 60-65% above the mean, the progressive overhaul has reduced fluctuations in the month-to-month operations from an average of about 10% to less than 5%.

Savings

The variation in manhour savings (above), which are stated as 6% for the first cycle of overhauls and about 14% for future cycles, is caused by the inherent losses involved in initiating the system. To prevent all aircraft from requiring overhaul at a given time, UAL started off by performing some of the operations prematurely, prior to the time when approved overhaul periods would have required this type work. Effectively this manpower was wasted but was a necessary loss.

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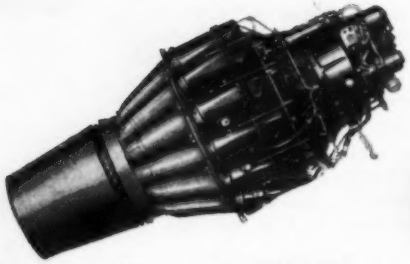
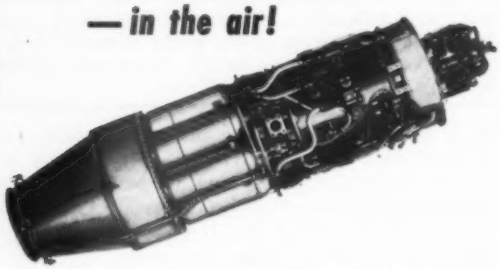


Allison J33 engine powering Lockheed Shooting Stars, F-94's and Grumman Panthers.



Allison J35 engine powering Republic Thunderjets and Northrop Scorpions.

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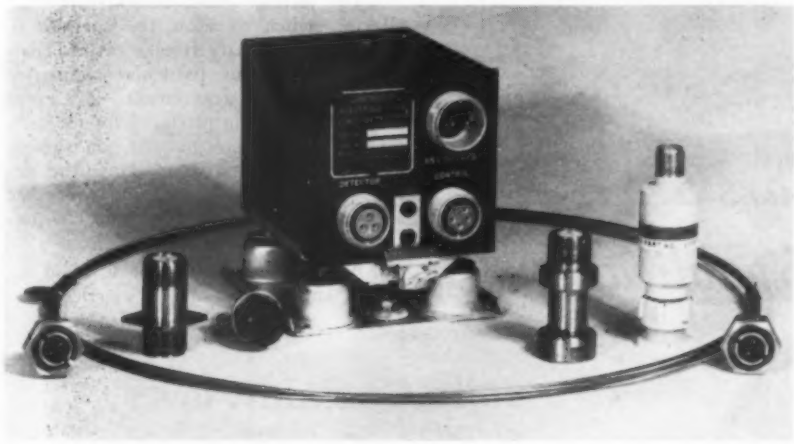


New Kidde Fire Detector Wins Approval

A continuous, resetting type fire detector for aircraft applications has been introduced by Walter Kidde & Co., Inc. and been approved by CAA for use in commercial aircraft. It has also passed U. S. Air Force and Navy Bureau of Aeronautics qualification tests.

The new automatic system, requiring no action on the part of the flight crew, even for resetting, has logged more than 2,000 hours in tests by Pan American in the Boeing 377, American Airlines in the Convair 240, Lockheed in the P2V5 and P2V6, and the McDonnell F2H and XF3H.

Basic unit in the Kidde system is a detecting element, .065 inches in diameter, which is routed through the area requiring fire detection coverage. This element consists of two small Inconel conductor wires surrounded by a ceramic-like insulating material. The entire unit is housed in a thin-walled Inconel tube.

At ambient temperatures, the value of which depends on unit design, no current can flow between the two wires, the insulating value of the ceramic-like material being too high. As the temperature is increased to dangerous levels, indicating a fire, the insulating quality of the material breaks down permitting current to flow between the two.

This current flow provides the signal sent to the amplifier which in turn measures the signal and, if needed, operates the alarm in the cockpit. This alarm can be visual and/or audible. Once the fire is extinguished the sensing element cools down and the signal goes off without resetting on the part of the pilot. The pilot does have a push-button type control to test the fire detector circuitry.

Response of the system is such that a signal is assured within three seconds after the element is subject to flame. The element comes in 20-foot and 100-foot lengths. Although light in weight, .0065 pounds per foot, the element is not damaged by vibration or flexing, according to Kidde. Weight of a complete single-engine installation is about four pounds and cost about $400.

The Kidde detector operates on 115 volt, 400 cycle, single phase current. Normal power consumption is eight watts with maximum draw during actual signaling 30 watts.

Address: **Walter Kidde & Co.,** Belleville, N. J.

Acid Safety Goggle

Available from United States Safety Service Co. is a new acid safety goggle named "Duo-Chem." It features a vinyl frame in bright yellow, the American Standards Association color code for acids, affording quick visual identification of it as an acid goggle.

Manufacturer claims that use of new materials such as vinyl frames and vinyl optical plastic lenses affords light weight and genuine comfort. The vinyl frame is soft enough to mold into a tight seal over facial contours and has maximum resistance to acids and alkalis. Metal hoods over screen vents offer adequate ventilation. The one-piece lens is made of a special vinyl acid-resistant optical plastic, which will not stain or discolor from acid fumes, vapors, or splashes. Replacable lens meets federal specifications for impact resistance.

Address: **United States Safety Service Co.,** Kansas City 6, Mo.

Electronic Inverters

A line of Eicor, Inc., inverters utilizes electronics in the control of frequency and voltage output. Accuracy and dependability of almost all known phases of airborne radar depend upon the stability of a 400-cycle power source, requiring extremely sensitive control. The frequencies of the Eicor inverters, using thyratron control tubes, are controllable to within 2½%, and the voltages within 3½%. The inverters are designed to operate at altitudes between zero and 45,000 feet, and at ambient temperatures between —55 degrees and 71 degrees centigrade.

Tube chassis are shock mounted to withstand aircraft vibration, and the units have been fungicided and plated at points necessary to withstand salt spray.

Currently being produced are units in the 2,500 VA and 5,000 VA capacities. Manufacturer expects to add several smaller sizes to the line.

Address: **Eicor, Inc.,** 1501 West Congress St., Chicago 7, Ill.

Rectifier

Inet, Inc., is producing a new regulated selenium rectifier which is especially designed to meet power requirements of jet bombers, providing direct current for both jet engine starting and radio-radar checkout. The ground power unit, mounted on pneumatic tires, supplies a continuous DC output of 1,500 amperes at 28 volts. Automatic controls provide voltage regulation at better than

Fourteen years ago . . . in our first year of publication . . .

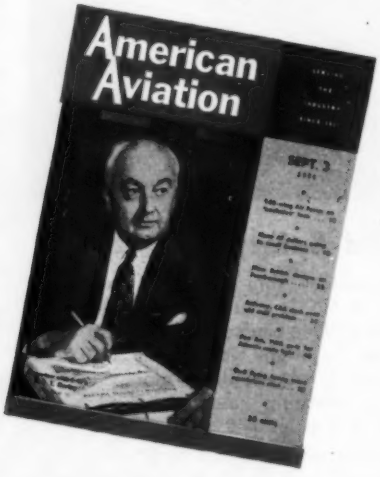
KOLLSMAN INSTRUMENTS

ran its first advertisement in American Aviation Magazine. We've both come a long way since then, and today Kollsman Instrument Corporation continues its advertising messages in American Aviation on a consistent schedule. We're proud of this experience-proven confidence.

The important companies in aviation, who know and have grown with this great industry, advertise consistently in the most important magazine in aviation . . .

Integrity

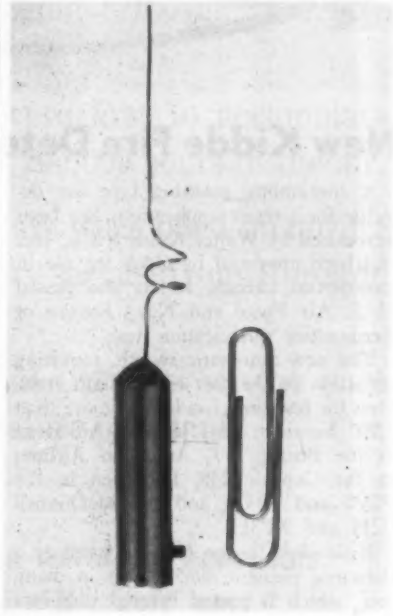
Influence



± ¼ of 1% from no load to full load with up to ± 10% AC line fluctuation. Recovery time is under 0.2 second with extreme load changes.

The rectifier has a multi-position selector switch to allow the operator to select the necessary voltage current characteristic for his particular testing or engine-starting requirements. A current model now being produced for the military provides dual outputs—one giving constant potential to maintain the aircraft's electrical equipment; the other simultaneously providing constant current for jet starting.

Address: **Inet, Inc.,** 8655 S. Main St., Los Angeles 3, Calif.



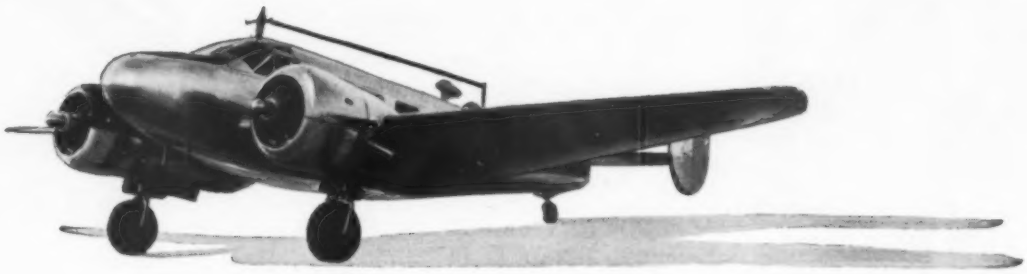
Miniature Thermostat

Announced by Thomas A. Edison, Inc., is a miniature, adjustable, metal-inclosed thermostat which has a temperature range from —50 degrees to 350 degrees Fahrenheit and is adjustable ± 60 degrees F. from its original factory setting.

Manufacturer states that sustained stability is achieved by use of a ceramic bushing to anchor the bimetal and by means of a separate phosphor bronze spring which carries the moving contact. The separate contact spring prevents the bimetal from taking a set or becoming overstressed by extreme contact pressure. Contacts are rated at 1 amp., 115 VAC, or .5 amp., 115 VDC. Over-all shell length is 1¼ inches and diameter is approximately $\frac{5}{16}$ inch.

Address: **Thomas A. Edison, Inc.,** West Orange, N. J.

To the 10,000 Operators of Executive Aircraft...



CHAMPION'S own twin Beech fills a busy year-round schedule.

...Every Major Airline Specifies *Dependable*

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Lycoming GO-435-C2, O-435, O-290
Jacobs R-775
Continental E-185

Pratt & Whitney R-1830, R-2000, R-2800 Series
Wright R-1820, R-2600 Series

Executive aircraft now number in excess of 10,000 planes, including 1500 multi-engined craft.

Two types of Champion aircraft spark plugs have been outstandingly successful in meeting the requirements of the vast majority of equipment in this category. In addition, Champion produces other types which cover the full range of privately owned and operated aircraft.

They are available through Champion aircraft distributors and dealers throughout the nation, and insure the ultimate in dependability and long life at prices which will keep your spark plug costs down, while giving you maximum efficiency and minimum service requirements. These are facts—not mere statements—substantiated by the detailed records of the airlines which are unquestionably the most exacting spark plug buyers in the world.

The RC26S and R37S-1 are approved for use in other engine models. See your dealer or write for Champion specification chart.

FOLLOW THE EXPERTS

Specify

CHAMPIONS

and fly with confidence

CHAMPION SPARK PLUG COMPANY, TOLEDO 1, OHIO

Grounded Portable Light

An approved three-wire convenience outlet has been included on a grounded portable light introduced in a new line of McGill lamp guards. Known as the 5,000-G series, the lamp guards are designed as a safety measure in handling portable lighting and power tools attached to the convenience outlet. The new line conforms to applicable requirements of the Underwriters' Laboratories and Insurance Inspectors.

The series has two cage designs, one featuring a concentrating end lens and rotary reflector for focusing light; the other with a standard McGill No-Rol cage and reflector, constructed of heavy steel wire.

Outlet is part of the moulded handle, permitting attachment of power tools at the working area without extra extension cords. Guards are equipped with the Levolier switch and furnished either with or without three-wire red thermoplastic cord.

Address: **McGill Manufacturing Co.,** Valparaiso, Ind.

Anti-Fog Liquid

A liquid which eliminates fog, mist, and steam when applied to any glass or plastic is available from Merix Chemical Co. The solution can be used with goggles, face-shields, masks, welders' eyeshields, aircraft windshields, spectacles, or binoculars.

Applied with cotton batting or soft cotton, the liquid forms an invisible protective film described as non-toxic, non-acid, and non-inflammable. Cost is $9.75 per gallon in five-gallon lot orders, and $13.95 per gallon in one-gallon lot orders.

Address: **Merix Chemical Co.,** 1021 E. 55th St., Chicago 15, Ill.

Cold Chest

Now being marketed by Revco, Inc., is a new sub-zero chest which provides temperature 95 degrees below zero Fahrenheit. Called the Revco Sub-Zero Cabinet, the chest is available in two sizes and is equipped with a sub lid to maintain constant temperature throughout the storage compartment.

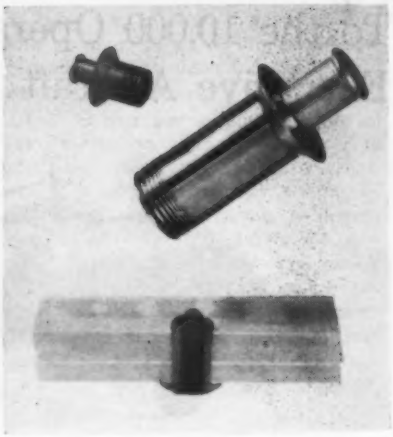
In the 1.5 cubic foot model, temperature is adjustable to 90 degrees below zero, while in the 6.5 cubic foot model, it may be controlled to as low as 80 degrees below. Chest is of all-steel welded construction and is air- and water-tight. Insulation material is high-density, non-setting Fiberglass bats.

Address: Revco, Inc., Deerfield, Mich.

Blind Rivet

A new type of high-strength blind rivet, available in either countersunk or protruding-head configuration, is being produced by The Deutsch Company. Designated the Barker Blind Rivet, the new fastener was originally conceived at North American Aviation, Inc.

Approval of the rivet for use on USAF aircraft has been obtained where use is confined to blind applications and where high-strength fasteners such as high-shear rivets or screws would ordinarily be installed, except for the blind nature of the installation. The new rivet is said to combine light weight and high strength. It can be driven into blind holes in forgings or fittings, requiring very little blind-side clearance.



The rivet is driven by either a rivet gun and flat set or an ordinary hammer. Consisting of two assembled parts, a 4130 steel pin and a stainless steel or aluminum sleeve, both types of rivets have satisfactorily passed corrosion and fatigue tests.

Address: **The Deutsch Co.,** 7000 Avalon Blvd., Los Angeles 3, Calif.

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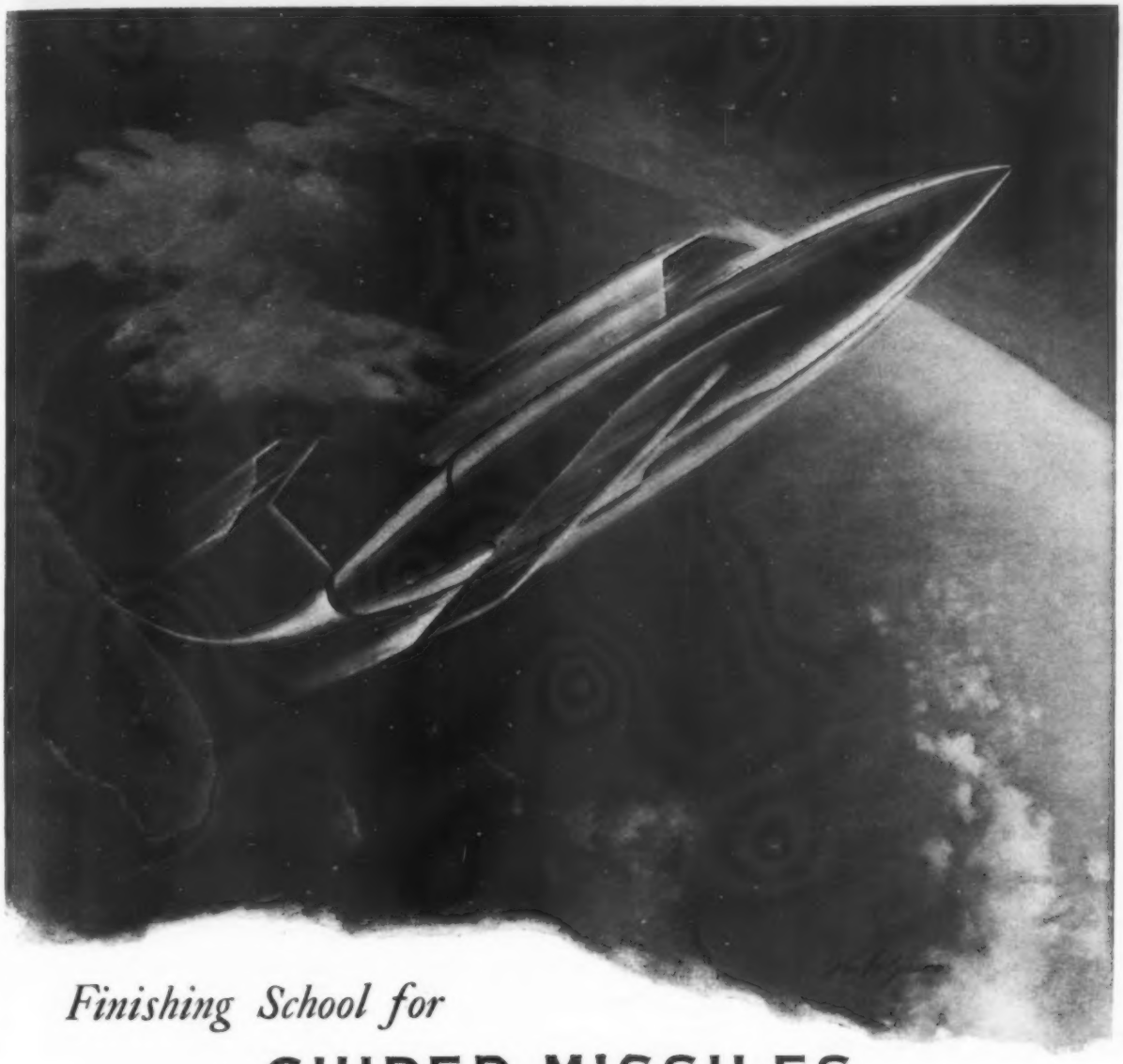

Finishing School for
GUIDED MISSILES

The Air Force Missile Test Center, used by all our military services as a long-range proving ground, stretches thousands of miles from Florida, out over the Bahamas, into the South Atlantic.

A pilotless bomber roars away from its launching stand, picks up speed, zooms into the blue. Setting its course for a far-off target in the ocean, it rockets over a chain of tiny islands where men and machines check its flight, its behavior, the operation of its guidance and control systems. It's a vital part of our air power of the future—aeronautical research and development laying the foundation for continued U. S. air supremacy!

Operated by the USAF's Air Research and Development Command, the Missile Test Center is geared up to test the wide variety of missiles, rockets and pilotless aircraft vital to modern air power. It reached its full stature with the recent completion of down-range observation stations. And the dramatic B-61 pilotless bomber, the Matador, designed and produced by Martin as part of its diversified missiles program, was the first to use the completed range. THE GLENN L. MARTIN COMPANY, Baltimore 3, Maryland.

Martin AIRCRAFT

Builders of Dependable Aircraft Since 1909

DEVELOPERS AND MANUFACTURERS OF: Navy P5M-1 Marlin seaplanes • Air Force B-57A Canberra night intruder bombers • Air Force B-61 Matador pilotless bombers • Navy P4M-1 Mercator patrol planes • Navy KDM-1 Plover target drones • Navy Viking high-altitude research rockets • Air Force XB-51 developmental tactical bomber • Martin airliners • Guided missiles • Electronic fire control & radar systems • **LEADERS IN** Building Air Power to Guard the Peace, Air Transport to Serve It.

Illustration is artist's conception of Air Force B-61 Matador pilotless bomber.

Airline Employment Nears 100,000 Mark

EMPLOYMENT in the U. S. scheduled air transport industry is approaching the 100,000 mark.

In the 11 months ending November 30, 1951, total employment gained 12,551 or 14.7%, reaching a high of 97,633.

This figure surpassed the immediate postwar peak of 96,544 reached in 1946.

The "Big Four"—American, Eastern, TWA and United—accounted for approximately 50% of the total gain in employment.

Equipment Factor

The sixteen trunk carriers employed 70,953 on November 30, including international and overseas divisions.

Local-service carriers employed 4,751. The two transcontinental all-cargo carriers, Slick and The Flying Tigers, employed 2,825 and showed gains of 44% and 39%, respectively, during the 14 months ending November 30.

Pan American World Airways employed 16,449 on Nov. 30, an increase of 12.6% in fourteen months. The total included employees absorbed from the merger with American Overseas Airlines.

Delivery of new equipment and record-breaking traffic have both contributed to the sharp employment increase. Since many of the airlines will be receiving new equipment this year it seems likely that employment will go well over the 100,000 mark by the end of this year.

Examiner's Report on NY-Balboa Proceeding

CAB Examiner Thomas L. Wrenn, in his report in the controversial New York-Balboa Through Service Proceeding, recommended approval of a Pan American-Panagra-Eastern interchange service between Latin America and principal northeastern U. S. cities. Wrenn also urged that National and Braniff be given time to work out a voluntary interchange agreement for service in the same area. Other recommendations were that:

- **the voluntary National-Panagra** interchange agreement be dismissed;
- **a CAB proceeding** aimed at a compulsory Pan American-National-Panagra interchange be dismissed;
- **a CAB proceeding** aimed at a compulsory Braniff-Eastern interchange be dismissed;
- **Braniff's Latin American** certificate be amended to include Miami with service limited to interchange flights with National and duration geared to a National-Braniff interchange operation;
- **the amended Through Flight Agreement** under which Panagra's planes are flown over PAA's Miami-Balboa route be approved and extended to July 1, 1960.

U. S. Scheduled Airline Employment

Carriers	Sept. 30, 1950	Dec. 31, 1950	Nov. 30, 1951	% Change from Sept. 30, 1950
All-American	410	417	465	+13.4%
American	11,355	11,370	14,481	+26.7%
Bonanza	106	109	144	+35.8%
Braniff	2,482	2,529	2,820	+13.6%
Capital	3,336	3,474	4,056	+21.5%
Caribair	148	150	168	+13.5%
Central	89	145	267	+200.0%
C&S	1,242	1,311	1,479	+19.0%
Colonial	616	573	648	+5.1%
Continental	720	713	896	+24.4%
Delta	2,096	2,146	2,534	+20.8%
Eastern	7,759	7,487	8,384	+8.0%
Empire	113	116	117	+3.5%
Flying Tigers	947	1,163	1,324	+39.8%
Frontier	568	525	537	—5.4%
Hawaiian	439	436	480	+9.3%
HAS	35	37	43	+22.8%
Inland	216	210	225	+4.1%
Lake Central	65	142	156	+140.0%
L. A. Airways	43	44	43	.....
Mid-Continent	1,074	1,080	1,235	+14.9%
Mid-West	61	60	45	—26.2%
National	1,742	1,947	2,290	+31.4%
Northeast	735	707	771	+4.8%
Northwest	5,260	5,313	5,207	—1.0%
Ozark	.....	187	320	.....
Pan American				
Atlantic	4,616+	4,296	4,224	—8.4%
Latin American	5,904	5,956	6,975	+18.1%
Pacific	2,312	2,867	3,194	+38.1%
Alaska	286	276	347	+21.3%
Non-div	1,480	1,577	1,709	+15.4%
Panagra	1,698	1,628	1,543	—9.1%
Piedmont	368	369	458	+24.4%
Pioneer	399	404	454	+13.7%
Resort	.....	33	138	.....
Robinson	155	172	233	+50.3%
Slick	1,041	932	1,501	+44.1%
Southern	217	257	408	+88.0%
Southwest	260	256	308	+18.5%
TWA	11,358	11,693	13,246	+16.6%
Trans-Pacific	.....	155	221	.....
Trans-Texas	339	348	371	+9.4%
U. S. Airlines	81	88	19	—76.5%
United	9,955	9,899	11,445	+14.9%
Western	1,089	1,078	1,236	+13.4%
West Coast	163	153	159	—2.4%
Wiggins	23	26	32	+39.1%
Wis-Central	218	228	277	+27.0%
Totals	**83,619**	**85,082**	**97,633**	**16.7%**

+ — Includes 1,292 employees of AOA absorbed in the merger in September, 1950. Source: official reports filed with the Civil Aeronautics Board.

Crazy with the heat!

Radar and electrical equipment on supersonic airplanes goes haywire unless cooled to "livable"* temperatures!

"Make it smaller!" was the plea of aircraft builders to the radar and electrical manufacturers.

So they did. Electronic tubes came down to "peanut" size, and the little black boxes housing equipment to operate guns, bomb sights, cameras, navigation and communication devices became smaller and smaller.

But as size decreased, *temperature increased!* It was found that, at high speeds and altitudes, radar and electrical equipment went haywire. The only answer was to cool this equipment, in the same manner cockpits are cooled for pilots.

AiResearch — world's most experienced concern in aircraft pressurization and air conditioning — went to work. Today ways are being pioneered here to cool the little black boxes. Much remains to be accomplished: Work that calls for close cooperation between AiResearch and the makers of airframes, engines, radar and electronic equipment.

AiResearch has the skilled engineers, laboratory, testing and manufacturing facilities, and the "know how" gained through 12 years of solving problems in the refrigeration and pressurizing of aircraft. That's why nearly every post-war airplane is AiResearch equipped!

* To the temperature limits of AN-E-19

AiResearch
DIVISION OF
THE GARRETT CORPORATION

AiResearch — specialists in the design and manufacture of aircraft refrigeration equipment — is a leader in the following major categories:

Air Turbine Refrigeration • Cabin Superchargers • Gas Turbines • Pneumatic Power Units • Electronic Controls • Temperature Controls • Heat Transfer Equipment • Electric Actuators • Cabin Pressure Controls

AiResearch Manufacturing Company, Dept. C-12, Los Angeles 45, California

Extra Section

By William D. Perreault

EXPECTING all-weather operations soon? Sperry's Robert Roe, talking before the Wings Club in New York, provided some food for thought about automatic landings which, he noted, are a long way off. Preliminary studies show that with a 400-foot ceiling and one-mile visibility, one out of ten first-approach attempts result in a missed approach. At 300 and ¾, using straight-in approaches, this deteriorates to one miss in five attempts. At 200 and ½, now authorized at more than 25 airports, one out of three first approaches will probably be missed approaches. Roe adds that this marginal operation reflects the inadequacy of the landing aids or "tools" and the fact that the average airline pilot encounters 200 and ½ about once a year.

•

We once reported the annual cost of the morning "coffee break" in one airline. It's only fair to report the other side. In a survey of 1160 companies of all sizes in 45 states, the Pan-American Coffee Bureau found that with a coffee break 82% reported a reduction in worker fatigue, 75% improved employee morale, 62% noted higher production, and 32% found a reduction in employee turnover. Substituting "coffee by stealth" with planned coffee periods in its New York offices, Mutual Life Insurance Company estimated an annual saving of $130,000 in labor costs among its 2,000 employees.

•

Bill Ray, who used to be with American Airlines, is getting credit for straightening out the troubles of Garuda Indonesian Airways in Indonesia. Bill is with the J. G. White Co., which is doing work for the republic, and is attached to aviation. Garuda has eight Convairs but for a while only two were operating, the others being grounded for lack of spare parts. The airline also has 22 Douglas C-47's and eight Catalinas. Bill has all Convairs operating, has stepped up frequencies, and payload is said to be over 90% at all times. The airline has an A-1 maintenance base, although engines are still being overhauled in Amsterdam.

•

Trans-Ocean Air Lines, which has just finished training 60 Indonesian pilots in California, is slated to get a two-year contract to establish and operate an air training center in Indonesia. It will be at a Jap-built airfield 30 miles from Jakarta, the capital. TOAL would also like to operate an international airline for the Republic of Indonesia but can't do so unless the KLM-Garuda Indonesian Airways contract with the government is broken or amended.

•

In April 1950, talking before the Society of Automotive Engineers, Pan American's **Scott Flower** presented some detailed figures on the economics of operating electronic flight simulators, specifically the Curtiss Wright-built Dehmel trainer. He noted that, used for recurring crew training on a plane such as the Convair Liner, with 20 aircraft involved in the fleet, a simulator would earn $45,000 in savings per year, amortized over a five-year period.

At this late date we have yet to hear that any airline has decided to order a simulator for recurring training activities, although the huge fleets of some airlines should bolster the economic advantages, nor for initial-plus-recurring training. From here it looks like the airlines are overlooking a profitable tool.

•

Occasionally we like to dig up a few facts about other systems of transportation to present to you. This week they are about the trucking industry as presented in the 1951 edition of Motor Truck Facts published by the Automobile Manufacturers Association. There were 8,637,969 motor trucks registered in the U. S. in 1950 with the average age seven years, but with well over one million over 14 years of age. The U. S. share of world-wide truck registrations was slightly over 50%. Truck transportation employs 5,714,000 persons.

Technical Literature

CONTROL BROCHURE: A six-page, four-color brochure dealing with pressure and temperature control systems for fighter aircraft can be obtained from Pacific Airmotive Corp., 2940 North Hollywood Way, Burbank, Calif.

TESTING EQUIPMENT: Available from the General Electric Co., 1 River Rd., Schnectady, N. Y., is an 80-page catalog summarizing all the company's testing and measuring equipment for laboratory and production-line use. Designated GEC-1016, the catalog is intended to be used as a reference to the apparatus available for industrial measurements. It contains 150 photographs and diagrams and describes the uses, features, specifications, and prices of more than 130 G-E testing and measuring devices.

CONTOUR MACHINING: DoAll Co., Des Plaines, Ill., is circulating a 16-page, two-color illustrated catalog explaining manufacturing short-cuts possible through the use of contour machining with band-tooled machines. Catalog contains a table of sawing and filing rates on representative metals of varying thicknesses; pictorial examples of industrial applications; specification comparison tables; information on accessory and tool selection; and a description of customer research facilities offered by DoAll.

SNOW PLOW: A bulletin on snow-fighting equipment is available from Walter Motor Truck Co., 1001-19 Irving Ave., Ridgewood, Queens, Long Island, N. Y. Bulletin is concerned with methods used in prompt and efficient clearing of snow from airports and highways, and includes information on best techniques to be used in case of heavy, light, normal, and deep snows.

RESISTANCE WELDING: A revised and rewritten Resistance Welding Data Book can be had from P. R. Mallory & Co., Indianapolis 6, Ind. at a price of $3.00. This fourth edition contains photographs, charts, tables, and diagrams on welding. Data book was prepared by Mallory engineers.

POWER PULL: Self-propelled power-pull units for aircraft ground service are described in a new 8-page booklet put out by Motor Generator Corp., Troy, O. The power generating units are designed to meet modern aircraft power requirements for lights, heaters, blowers, radio, galley, and engine starting.

Boston's Chapel

The first chapel to be erected on any airport in the world was dedicated Jan. 20 at Logan International Airport, Boston. Called the "Chapel of our Lady of the Airways," it will serve the spiritual needs of both employes on the airport and airline passengers. It is planned to have masses and other devotional exercises every day.

2,300 Turkeys Solve NAL Gift Problem

All employes get certificates for 13-pounders through A&P at total cost of $22,500.

A TURKEY for every employe is National Airlines' solution to the knotty problem of what an airline should give its workers for Christmas.

The program, now in its second year, costs the company some $22,500 and has raised a number of administrative problems, but it's more than paying its way in goodwill and morale-building. And, NAL finds, its 2,300 employes appreciate the 13-lb. turkeys more than some other present that would have cost twice as much.

Highlights of NAL's Christmas Plan

Gift: A 13-lb. turkey. Each employe receives a gift certificate redeemable at any A&P store. Certificate can be transferred by employe to relative or friend.

Eligibility: Every employe working for the airline on Dec. 24, regardless of length of service.

Alternative: If turkey is not desired, certificate may be used for equivalent amount of groceries, meat, etc. A&P stores are not allowed to give money in exchange for certificates.

Validity: Certificates are valid until Jan. 15.

Cost of program: Company estimates it spent $22,500 last Christmas.

NAL had been casting about for some time for the most effective and feasible method of remembering its employes at Christmas when G. T. Baker, president and board chairman, came up with the turkey idea. He remarked that he had never forgotten the turkey which was given to his family each Christmas by the Chicago *Daily News,* with which his father was connected.

"It seemed like a natural, and we decided to investigate the possibilities," states John L. Morris, NAL vice president. "Strangely enough, although we are in the transportation business, we recognized that we had a transportation problem on our hands. Distribution is the key to the whole thing.

"We realized immediately that it would not be feasible to purchase turkeys locally and then distribute them through our own transportation facilities because of the terrific traffic demand during the Yuletide period and the necessity of transferring the package at various points."

NAL contacted Swift, Armour, Wilson and other packers who could supply the birds, but in each case they didn't have branch offices in many of the NAL cities. Finally, the company conferred with the Great Atlantic & Pacific Tea Co. A&P, it discovered, had stores in every NAL city except Marianna and Key West, Fla., and Havana, Cuba. A&P was willing to have its Tallahassee manager deliver the turkeys to Marianna, and a Miami representative take them to Key West. However, NAL finally decided to fly the birds (frozen) to Key West and Havana.

For the rest of the system, NAL issued a gift certificate to each employe. Certificates are redeemable at any A&P store, regardless of location, and call for delivery to the bearer of "one dressed and drawn turkey weighing approximately 13 lbs." On the reverse side of the card, the store manager fills in exact weight and value, and returns it to the airline for payment.

NAL doesn't quibble if the weight runs a little over maximum allowance, but actually it has averaged out to about a 12-lb. bird.

In the first year of the program, certificates were valid until Dec. 31, so the presents could be used for New Year's, if desired. This year, deadline was extended to Jan. 15.

"Obviously, every person doesn't want a turkey," Morris explains. "In many cases two or three stewardesses live together; some employes aren't prepared to cook a turkey; many prefer to send their certificates to their families, girl friends, etc. Certificates have been returned from all parts of the U. S. and Canada.

"In order to try to meet as many conditions as possible, we have arranged with A&P to give the holder of a turkey certificate a ham, groceries, or anything else in the store, up to the equivalent value of the turkey.

"The net result is that on many occasions where you have two stewardesses living together, one will use her certificate for a turkey and the other will use hers for the 'fixings,' fruit cake, etc.

"While we endeavor to make the plan just as flexible as possible and to cooperate fully with our employes, we don't permit A&P to give money in exchange for certificates."

One of the big problems in the program is the turnover in personnel. Those handling distribution of certificates work closely with the personnel department and with supervisory personnel at the various stations. New certificates are issued and many already issued are voided right up until Christmas Eve.

But every employe working for NAL on Dec. 24, *regardless of length of service,* receives a certificate.

Cost of the turkeys varies. Price this Christmas averaged about 69c per lb., against 65c last year. Bulk of the distribution is in the southeastern states where NAL can get a firm price from the A&P district. In other sections, however, it pays the price which prevails during Christmas week.

An interesting sidelight is that NAL found the most popular turkey in New York is not dressed and drawn, but one which still has the head and "innards" intact. NAL believed its employes would be happier with the first type, so A&P each year sends into New York an extra supply of dressed Pilgrim hen turkeys, which are standard throughout the gift program.

"The project has reached the proportions of a major undertaking," Morris states. "The people who work on it, however, are extremely enthusiastic and really seem to get quite a 'charge' out of it.

"We have had two or three unusual things occur—not the least of which is the fact that of all the certificates issued at Christmas, 1950, only one person failed to receive his, and, believe it or not, that person was none other than G. T. Baker!

"This Christmas we received a frantic teletype from our station manager in Panama City, Fla., imploring me to issue a new certificate in the name of Agent J. B. Williams because agent's children had 'destroyed same.' Naturally I complied.

"We have become convinced that the gift of a turkey is the finest Christmas present we can give our employes within our means to give. Being the traditional bird, it has a special significance and is received with more enthusiasm than a gift costing twice the amount, or twice as much cash money."

Airline Commentary

By Eric Bramley

HERE is a story to end all stories on overflying points because of weather. Malmo, Sweden, and Copenhagen, Denmark, are just across the straits from each other, and although Scandinavian Airlines System shows a 20-minute flight, this is a little liberal. It's just a short hop from one airport to the other and the airline operates a lot of flights each day.

Not long ago, a Danish lawyer phoned home to his wife in the afternoon and said he had just come into some Swedish crowns and would be a little late for dinner because he was going to hop over to Malmo and buy some nylon stockings and a few other luxuries which the Swedes had, but which were on short supply in Denmark. His wife was delighted.

It was the time of year when fogs were prevalent, but the flight left Kastrup Airport in Copenhagen bound for Malmo. One of those weather quirks happened. Malmo Airport suddenly closed. Then Copenhagen closed. The shuttle plane had no alternative but to head for Norkoping, Sweden, the nearest airport open.

En route to there, Norkoping closed and the plane finally had to fly to Stockholm. By this time it was night, so the passengers were given meals and hotel rooms in Stockholm. Our Danish lawyer phoned his wife in Copenhagen at airline expense to tell her he wouldn't be home for dinner or at all that night.

Next morning he was taken to the airport and put on a Copenhagen-bound plane. By the time the plane reached there, however, Copenhagen was closed in and the flight went to Amsterdam, Holland. The lawyer was fed, given a hotel room and he again called his wife at airline expense. By this time, the little woman was beginning to be skeptical about this 20-minute hop to Sweden for nylons.

Next day, after nice food and a good room, the lawyer was again put on a plane bound for Copenhagen. Again it passed over the city and landed at Aalborg, in the northern part of Denmark. At least he was back in the country. For a third night he was given accommodation and called his wife. On the next day, he finally got back to Copenhagen.

But here's the pay-off: Having visited three countries and spent three nights away from home, all expenses paid, the lawyer turned in his Malmo-Copenhagen return trip ticket for refund! The round-trip ticket was worth about $8.80.

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C. J. Swain, factory representative for Zephyr Manufacturing Co., a west coast aircraft tooling house, read our recent column urging that bibs be furnished to passengers for use during in-flight meals.

"I spend a great deal of time on the airlines and have had more than my fair share of 'gravy on the vest'," he writes.

"Some two years ago I went to the trouble of spending one hard-earned dime . . . for an extra bib from Paddy's Clam House . . . New York City . . . I sent this with a few pertinent comments on the subject of bibs to the attention of Mr. Ralph Damon, then president of American Airlines. Some weeks later I got a very polite note advising me that my valued suggestion had been referred to the passenger relations department and thanked me for my interest in the subject. Net result—no action.

"Some months later I sent a similar suggestion to TWA. Again, net result—no action.

"Therefore, you can understand my interest in your recent comments on the subject. I am *so* happy to hear that Emily Post now approves of the napkin-under-the-chin technique. Having been using same myself for the last four or five years, I personally don't give a damn what convention says on the subject."

Mr. Swain adds that he considers himself an "unofficial spokesman for several thousand other peddlers like myself, who are the biggest customer group of the airlines." Our suggestion, Mr. Swain, is that you not only continue as such a spokesman but also enlist some others, and maybe you'll get some action.

AIRLINE PEOPLE

ADMINISTRATIVE

Howard L. Clark, a vice president and director of Pan American-Grace Airways, has been elected a vice president of W. R. Grace & Co., co-owner of the airline.

KLM Royal Dutch Airlines has promoted five of its executives to the rank of vice president, as follows: **V. H. L. Dubourcq** becomes v.p.-transport Western Group; **J. C. van der Kloot,** v.p.-transport Central Group; **B. G. Os van Delden,** v.p.-transport Eastern Group; **T. M. van Erp,** v.p.-administration; and **A. H. van Gelder,** v.p.-finance.

TRAFFIC & SALES

H. Laird Loftis has been named to the newly-created post of interline and tours officer for the North American sales division, British Overseas Airways Corp.

E. Morton Freligh, Jr., appointed as regional sales manager of Colonial Airlines in Washington, D. C.

Elden D. Brown has become d.t.s.m in San Antonio for Continental Air Lines. **Jerry Williams** replaces Brown as Continental's c.t.s.m. in Wichita Falls.

Capital Airlines has named **Louis J. Kroeck** reservations manager in Milwaukee, **William O. Farthing** as reservations manager in Chattanooga, and promoted **William B. Pace** to traffic rep. in Washington . . . **Richard W. Valentine** has been appointed sales rep. for American Airlines in Washington. **James P. Bowlin** replaces Valentine as ass't to the vice president—eastern region of American Airlines . . . **Graydon Hall** has become Eastern Air Lines t.s.m. at Chattanooga, **Henry S. McConnell** has assumed similar duties in Charlotte, and **Thomas T. Sherwood** is now traffic and sales rep. in charge at West Palm Beach for Eastern.

OPERATIONS-MAINTENANCE

James R. Kervin has become station mgr. at Port of Spain, Trinidad, for Pan American . . . **Tom O. Sloan** has been named Pioneer's mgr. at Albuquerque replacing **Herman Adcox,** the company's new superintendent of passenger service. **Lee Hobdy** has succeeded Sloan as mgr. at Santa Fe . . . **William B. Meisner,** recently station service mgr. for United at Chicago, became a technical staff assistant-ground services at Denver. **Charles Zitek** succeeded Meisner at Chicago. **Frank Murdock** has replaced Zitek as station mgr. at Providence. **Ralph C. Moeser** has become station mgr. at Philadelphia. Other new station mgrs. appointed by United are: **Jake Williams** at Los Angeles; **Cyril L. Palmer** at Salinas; **Albert S. Cutting** at Twin Falls; **George B. Clark** at The Dalles; and **John A. Mitchell** at Lincoln, Nebr. . . . Eastern Air Lines has named **Henry F. "Bob" Abbott** station mgr. at Akron-Canton, **L. R. Hicks** at Macon, Ga., and **Ernest A. Woodward** at West Palm Beach.

Marshall D. Kochman, formerly dir. of properties of Delta Air Lines, has been appointed chief of air terminal properties bureau of the Port of New York Authority's Dept. of Aviation Development.

When calls came for tactical air support in Korea, the day after hostilities started, Douglas-built AD4 Skyraiders were on the job. From their battle stations on U.S. carriers, they flew into combat against North Korean ground troops.

Ready in quantity to meet the immediate need—with versatility to serve as day or night bombers, aircraft early warning, or for anti-submarine work... that's the Skyraider story.

Now in production at Douglas is an even more versatile member of the AD series. It's the AD5, which can be modified for use as a 6-place transport, 12-place evacuation ship, photographic plane, litter carrier, long-range bomber, attack bomber, or radar-equipped "eyes of the fleet."

Because it *does* take both time and money to produce good airplanes, Douglas works far ahead on design and development so when the call to battle stations comes, the planes will be there. Douglas Aircraft Company, Inc.

Depend on DOUGLAS

First in Aviation

Skilled engineers and technicians are needed at Douglas ...a good place to work.

WORLD'S LARGEST BUILDER OF AIRCRAFT FOR 32 YEARS ➤ MILITARY AND COMMERCIAL TRANSPORTS FIGHTERS ➤ ATTACK PLANES ➤ BOMBERS ➤ GUIDED MISSILES ➤ ELECTRONIC EQUIPMENT ➤ RESEARCH

U. S. DOMESTIC AIRLINE REVENUES AND EXPENSES FOR OCTOBER, 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	$ 14,653,541	$ 12,916,112	$ 630,439	$ 258,380	$ 687,162	$ 127,049	$ 10,904	$ 11,724,233	$ 6,047,291	$ 5,676,942	$ 2,929,308
Braniff	1,632,667	1,401,841	84,820	31,448	42,084	10,619	58,631	1,395,100	662,921	732,179	237,567
Capital	3,647,579	3,271,174	94,967	98,024	108,759	19,919	5,590	3,114,754	1,539,590	1,575,164	532,825
Caribbean	74,346	46,769	19,663	. . . .	2,488	327	3,175	71,443	29,213	42,230	2,903
C & S	1,186,666	1,031,732	86,701	27,031	23,284	8,688	1,635	1,014,599	519,970	494,629	172,067
Colonial	433,457	365,527	61,608	3,161	3,646	1,281	-2,079	418,759	180,756	238,033	14,698
Continental	724,867	557,392	83,695	6,324	14,318	4,593	51,440	788,854	433,773	355,081	-63,987
Delta	2,120,328	1,856,623	82,400	51,578	69,483	19,288	14,975	1,746,022	825,243	920,779	374,306
Eastern	7,291,513	6,698,698	150,211	170,396	94,425	83,844	53,658	6,321,575	3,179,014	3,142,561	969,938
Hawaiian	277,680	230,057	1,425	8,758	28,720	4,686	3,199	321,177	127,099	194,078	-43,497
Inland*	286,291	247,671	27,811	4,472	3,873	2,261	. . . .	289,579	154,738	134,841	-3,288
MCA**	836,747	687,776	103,583	6,888	11,408	5,758	19,450	757,621	349,573	408,048	79,126
National	1,869,246	1,574,764	48,345	17,103	97,381	28,143	306	1,623,931	786,826	837,105	245,315
Northeast	602,147	448,492	130,244	8,499	9,669	2,290	165	610,011	277,506	332,505	-7,863
Northwest	3,137,047	2,618,706	236,321	48,928	79,183	15,380	15,210	2,941,407	1,517,479	1,423,928	195,639
Trans Pacific	129,456	81,829	26,445	487	1,746	642	16,724	135,604	53,645	81,959	-6,148
TWA	8,642,254	7,573,223	485,629	202,125	281,397	66,941	. . . .	7,706,761	4,074,439	3,632,322	935,493
United	11,030,343	9,191,911	812,570	295,147	376,951	75,230	159,441	8,501,291	3,981,397	4,519,894	2,529,052
Western	1,182,767	1,004,783	62,331	18,674	12,707	6,007	. . . .	1,045,111	538,477	506,634	137,656
TOTALS	59,758,942	51,805,080	3,229,208	1,257,423	1,948,684	482,946	412,424	50,527,832	25,278,950	25,248,882	9,231,110

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Figures do not include operations of local service segment (route 106) awarded MCA by CAB in the Parks Air Lines Investigation Case. Figures covering operations of route 106 are carried separately on local service airlines summary sheets.

U. S. INTERNATIONAL AIRLINE REVENUES AND EXPENSES FOR OCTOBER, 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	U. S. MAIL REVENUES	FOREIGN MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
American	$ 406,250	$ 328,072	$ 10,837	$ 11,553	$ 300	$ 34,071	$ 5,236	$	$ 386,491	$ 206,472	$ 180,019	$ 19,759
Braniff	625,947	401,593	171,871	9,084	. . . .	30,912	11,319	. . . .	735,940	344,505	391,435	-109,993
C & S	354,813	157,823	154,438	944	. . . .	18,946	7,255	13,703	283,079	151,715	131,364	71,734
Colonial	131,545	117,105	9,759	2,315	. . . .	605	376	. . . .	129,080	56,288	72,792	2,465
Eastern	421,556	376,684	32,201	. . . .	. . . .	7,980	4,711	. . . .	400,600	262,774	137,826	20,956
National	120,564	106,254	671	. . . .	3,599	7,850	2,190	. . . .	170,765	57,222	113,543	-50,201
Northwest	1,394,811	771,035	316,706	48,009	8,368	215,775	7,433	. . . .	1,114,129	516,558	597,571	280,681
Panagra	1,254,538	1,009,047	51,900*	45,306	90,156	. . . .	39,995	1,938	1,232,077	560,112	671,965	22,461
Pan American												
Latin Amer.	5,645,246	3,771,019	602,250	157,935	. . . .	761,739	92,854	178,966	5,892,327	2,546,836	3,345,491	-247,081
Atlantic	6,021,950	4,047,212	1,142,910	235,416	. . . .	402,042	84,109	120,613	5,229,664	2,664,868	2,564,796	792,286
Pacific	2,749,711	1,879,380	367,921	83,619	. . . .	335,073	26,256	15,008	2,292,511	1,290,902	1,001,609	457,200
Alaska	579,771	318,098	119,840	. . . .	. . . .	129,799	5,602	5,913	522,002	229,101	292,901	57,769
TWA	4,550,120	2,930,699	770,178	230,333	. . . .	309,969	79,106	52,323	3,593,722	1,825,217	1,768,505	956,398
United	540,485	424,367	48,719	. . . .	. . . .	13,468	2,559	. . . .	800,959	472,964	327,995	-260,474
TOTALS	24,797,307	16,638,388	3,800,201	824,514	102,423	2,268,229	369,001	388,464	22,783,346	11,185,534	11,597,812	2,013,960

* U.S. mail pay accrued on basis of temporary mail pay rate order of May 5, 1950.

NOTE: Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

U. S. LOCAL SERVICE AIRLINE REVENUES AND EXPENSES FOR OCTOBER, 1951

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
All American	$ 333,555	$ 179,288	$ 133,499	$ 5,596	$ . . .	$ 650	$ 13,387	$ 330,860	$ 163,826	$ 167,034	$ 2,695
Bonanza	89,914	39,524	47,100	174	559	377	1,406	101,929	46,721	55,208	-12,015
Central	118,176	25,788	94,285	332	919	102	12,556	105,930	30,129	75,801	12,247
Empire	92,432	34,447	51,860	879	. . .	176	4,455	Carrier did not report operating expenses.			
Frontier	324,253	124,300	184,028	2,326	7,881	808	4,155	373,189	179,571	193,618	-48,937
Lake Central	40,931	29,732	48,019	2,327	. . .	181	2,886	100,765	41,770	58,995	-59,835
MCA*	76,169	52,423	20,720	1,774	1,040	171	. . .	80,625	32,491	48,134	-4,455
Mid-West	35,455	1,849	33,538	. . .	. . .	11	. . .	31,774	12,231	19,543	3,681
Ozark	221,502	53,480	166,204	1,561	. . .	257	. . .	224,800	125,453	99,347	-3,298
Piedmont	320,518	233,626	76,907	3,065	3,201	1,627	. . .	310,280	156,441	153,839	10,238
Pioneer	332,822	236,698	78,267	1,830	6,145	1,749	7,384	296,407	141,773	154,634	36,415
Robinson	186,088	117,235	49,600	2,469	2,351	253	12,608	161,668	89,569	72,099	24,420
Southern	234,225	100,011	130,187	2,729	. . .	401	612	248,672	123,670	125,002	-14,447
Southwest	198,208	121,753	66,779	1,318	3,603	518	820	202,996	85,423	117,573	-4,788
Trans-Texas	Figures not yet available.										
West Coast	113,869	51,808	57,676	397	1,198	197	2,053	101,230	45,361	55,919	12,568
Wiggins	20,033	1,652	17,862	275	. . .	5	. . .	23,612	3,882	14,730	-3,579
Wis. Central	188,593	89,849	93,469	3,616	. . .	630	. . .	184,810	92,707	92,103	3,783
TOTALS	2,926,743	1,493,463	1,350,000	30,668	26,897	8,113	62,322	2,879,597	1,376,018	1,503,579	-45,287
					Helicopter Mail Service						
Hel. Air Service	31,460	. . . .	31,456	. . .	. . .	. . .	. . .	33,068	19,608	13,460	-1,608
Los Angeles	29,446	. . . .	29,446	. . .	. . .	. . .	. . .	29,194	14,576	14,618	253

* Figures cover local service segment awarded MCA by CAB in the Parks Air Lines Investigation Case.

NOTE: Figures are taken from monthly reports filed by the airlines with CAB. The data are tentative and subject to later change.

SUMMARY OF U. S. DOMESTIC AIRLINE TRAFFIC FOR NOVEMBER, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON-MILES ***	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	382,927	197,665,700	288,488,000	68.52	1,525,650	713,691	3,127,081	24,642,758	38,327,009	64.30	6,500,846	6,730,096	96.30
Braniff	62,199	22,010,000	35,417,000	62.15	130,005	74,931	153,612	2,462,745	4,597,473	53.57	983,951	959,717	95.45
Capital	150,072	45,458,000	79,320,000	57.31	165,112	181,640	452,821	5,144,770	10,487,066	49.06	1,997,598	2,036,819	95.64
Caribbean	7,504	595,000	1,432,000	41.55	957	. . . .	2,635	51,413	130,327	39.45	50,487	50,095	100.00
C & S	40,604	15,182,000	25,017,000	60.69	60,271	59,005	77,873	1,652,336	3,048,927	54.19	760,923	773,970	96.76
Colonial	19,754	4,956,000	10,283,000	48.20	9,040	8,210	9,197	523,439	1,063,217	49.23	317,431	322,528	95.42
Continental	26,191	10,633,000	21,040,000	50.54	51,637	14,680	53,282	1,138,049	2,271,306	50.11	636,775	618,360	99.40
Delta	74,890	32,027,000	46,888,000	68.31	158,881	100,957	287,711	3,623,755	5,780,471	62.69	1,307,878	1,325,500	97.71
Eastern	268,210	111,825,000	171,982,000	65.02	447,084	320,167	503,759	12,859,295	24,313,319	52.89	4,302,101	4,471,123	97.25
Hawaiian	25,283	3,249,000	5,672,000	57.28	2,263	7,529	63,925	343,897	678,369	50.69	264,045	212,736	99.31
Inland*	9,006	3,613,000	5,920,000	61.03	18,551	8,029	13,977	386,745	648,036	59.68	248,131	251,700	98.12
MCA**	34,140	10,495,000	18,814,000	55.78	39,925	20,626	41,173	1,106,587	1,992,418	55.53	721,147	688,976	99.23
National	51,834	33,421,000	53,040,000	63.01	102,734	46,611	432,276	3,988,845	7,082,369	56.32	1,282,735	1,174,590	99.23
Northeast	34,498	6,612,000	10,653,000	62.07	14,412	14,870	14,100	656,558	1,065,294	61.63	353,558	381,910	88.84
Northwest	60,067	38,335,000	59,107,000	64.86	209,809	131,349	238,791	4,346,213	7,923,353	54.85	1,031,117	1,057,102	96.70
Trans Pac.	11,983	1,523,000	3,928,000	38.77	1,390	186	2,258	121,135	365,333	33.16	140,290	118,499	99.47
TWA	172,607	120,695,000	170,771,000	70.68	1,112,859	553,915	1,253,113	14,474,650	22,731,653	63.68	4,230,026	4,333,042	96.43
United	234,725	150,305,000	211,923,000	70.92	1,837,422	720,713	1,791,790	18,729,968	30,967,461	60.48	5,071,330	5,059,643	97.30
Western*	48,601	17,372,000	27,827,000	62.43	109,354	36,585	40,775	1,845,178	2,898,185	63.67	763,206	765,030	98.58
TOTALS	1,715,095	825,991,000	1,247,522,000	66.21	5,997,356	3,013,694	8,560,149	98,098,336	166,371,586	58.96	30,963,575	31,331,436	96.87

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.
** Figures do not include operations of local service segment (route 106) awarded MCA by CAB in the Essex Air Lines Investigation Case. Figures covering operations of route 106 are carried separately on local service airlines summary sheets.
*** Includes air parcel post.

NOTE: Figures include both scheduled and non-scheduled operations.

SUMMARY OF U. S. LOCAL SERVICE AIRLINE TRAFFIC FOR NOVEMBER, 1951

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	MAIL TON MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
All Amer.	15,730	2,365,000	5,789,000	40.85	5,632	10,350	. . .	247,219	661,567	37.37	275,653	282,660	90.86
Bonanza	2,538	654,000	1,581,000	41.37	508	236	939	58,900	179,199	32.86	75,294	77,355	97.33
Central	4,050	477,000	2,718,000	17.55	1,783	673	1,426	48,337	272,126	17.76	113,386	117,380	95.75
Empire	3,774	871,000	2,253,000	38.66	2,300	1,442	. . .	85,063	245,321	34.67	107,338	102,420	98.06
Frontier	8,668	2,220,000	7,890,000	28.14	9,628	5,761	24,852	263,034	631,159	41.67	375,658	381,120	97.26
Lake Central	2,715	511,000	1,940,000	26.34	1,540	4,605	. . .	53,212	221,910	23.98	95,745	106,560	87.04
MCA*	3,103	667,000	1,668,000	39.99	1,444	2,856	3,877	71,871	185,431	38.76	77,263	81,240	92.61
Mid-West	252	40,000	264,000	15.23	830	. . .	. . .	4,169	29,093	14.33	66,120	73,860	89.52
Ozark	4,890	782,000	4,078,000	19.18	2,552	3,937	. . .	80,758	412,343	19.59	194,181	225,412	84.65
Piedmont	15,783	3,570,000	7,254,000	49.21	6,145	5,721	8,927	362,323	829,073	43.70	345,447	360,956	95.39
Pioneer	14,292	3,872,000	8,397,000	46.11	9,548	3,634	14,032	415,994	856,064	48.59	356,693	341,613	98.07
Robinson	10,902	1,898,000	3,466,000	54.76	3,038	4,962	2,814	185,887	382,320	48.62	165,292	142,134	93.76
Southern	9,052	1,668,000	5,524,000	30.15	7,009	6,034	. . .	172,499	499,729	34.52	263,431	269,880	97.47
Southwest	9,558	1,817,000	4,147,000	43.81	5,596	3,660	7,231	198,819	473,914	41.95	197,464	207,509	92.90
Trans-Texas	6,790	1,507,000	5,162,000	29.19	4,334	2,331	6,234	164,172	516,228	31.80	245,823	244,080	99.54
West Coast	5,478	851,000	2,327,000	36.57	910	747	1,456	81,887	206,579	39.64	111,617	118,260	91.14
Wiggins	311	32,000	140,000	22.86	85	79	. . .	3,027	14,941	20.26	35,032	47,228	74.18
Wis. Cent.	8,244	1,232,000	3,433,000	35.89	5,854	7,334	. . .	129,154	392,318	32.92	163,466	177,180	92.19
TOTALS	126,130	25,034,000	68,031,000	36.80	68,736	64,362	71,788	2,626,325	7,009,315	37.47	3,264,903	3,356,847	94.08
						Helicopter Mail Service							
HAS	. . .	. . . .	. . . .	. . .	2,014	. . .	. . .	2,014	4,674	43.09	24,617	25,330	97.18
Los Angeles	. . .	. . . .	. . . .	. . .	3,194	. . .	. . .	3,194	6,733	47.44	17,766	21,056	84.38

* Figures cover local service segment (route 106) awarded MCA by CAB in the Essex Air Lines Investigation Case.

NOTE: Figures include both scheduled and non-scheduled operations.

ALL-CARGO OPERATIONS, THIRD QUARTER, 1950-1951

	TRAFFIC							REVENUES & EXPENSES						
AIRLINE	FREIGHT TON-MILES	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED	TOTAL OPERATING REVENUES	FREIGHT REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
A[illegible]ows	91,449	298,305	30.66	85,230	85,230	100.00	$ 54,440	$ 49,160	$	$ 46,953	$ 39,753	$ 7,199	$ 7,487
'50	105,681	302,155	34.97	85,420	85,420	100.00	53,968	51,991	. . . .	45,562	38,263	7,299	8,406
F[illegible] Tiger	6,140,614	8,277,361	74.18	1,273,440	1,756,271	71.17	1,727,716	978,835	21,240	900,061	596,054	304,007	827,656
'50	5,733,341	7,136,740	80.33	1,065,135	884,799	98.20	1,603,482	776,666	110,968	752,934	504,760	248,174	850,548
H[illegible]e	1,672,731	2,519,246	66.40	447,674	421,205	100.00	238,020	238,772	. . . .	272,772	183,865	88,907	-34,752
'50	Company did not begin operations until March 25, 1951.												
S[illegible]	16,022,216	20,127,372	79.60	3,097,519	2,363,446	85.17	2,249,963	1,602,721	586,403	2,207,270	1,306,322	900,948	42,693
'50	13,796,834	16,561,503	83.30	2,825,573	1,992,596	88.79	2,083,832	1,373,411	599,076	1,609,312	943,691	665,622	474,520
US [illegible]irlines	Figures not yet available.												
'50	1,093,064	1,795,548	60.89	312,619	286,140	90.83	172,508	78,876	93,261	238,502	152,694	85,808	-65,995
TOT[illegible]S	23,927,010	31,222,284	76.63	4,903,863	4,626,152	81.48	4,270,139	2,869,488	607,643	3,427,056	2,125,994	1,301,061	843,084
'50	20,728,920	25,795,946	80.35	4,288,747	3,248,955	91.84	3,913,790	2,280,944	803,305	2,646,310	1,639,408	1,006,903	1,267,479

NOTE: Figures do not include defense contract operations.

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REVISED LOCAL SERVICE route structure in the north central area as a result of CAB's recent decisions in the Wisconsin Central Renewal Case and the North Central Route Investigation is shown in map above. Predominant local carrier in the area is Wisconsin Central with Mid-Continent, a trunk-line, operating the old Parks Air Lines route between Sioux City and Chicago on a local service basis.

INDUSTRY PERSONNEL

Promotions by Goodyear Aircraft Corp. include **C. E. Lehman** to plant superintendent of metalcraft manufacturing, **Albert Goulding** to plant superintendent of the fighter division, **D. L. Frank** to production superintendent of the fighter division, **L. O. Figland** to general foreman of parts manufacturing, **W. H. Wise** to general foreman of assembly; **P. D. King** to manager of fighter manufacturing planning and **R. O. Brown** to manager of fighter tool engineering.

Byron E. Snow has been chosen manager of Aeroquip Corp.'s Chicago office . . . Greer Hydraulics has named **Arthur K. Atkinson** sales manager of the industrial division . . . Elected to succeed his late brother John as president of Breeze Corps. was **Joseph J. Mascuch.**

Douglas Aircraft has selected **C. P. Grady** assistant foreign sales manager and **David Downey** assistant domestic commercial sales manager . . . **Milo F. McCammon** has returned to Bendix Aviation Corp. to handle manufacturing operations.

Robinson Aviation, Inc., elected **Thomas D. Neeland, Jr.,** to the board of directors . . . **Bill Schurr** has been designated public relations administrator for Piasecki Helicopter Corp. . . . **Frederick A. W. Stiefler** has joined Aircraft Industries Association as assistant director of public relations for the Western region.

Norden Laboratories Corp. elected **Dr. F. T. E. Thompson** vice president and **William W. Sisbower** secretary . . . Pacific Airmotive Corp.: **Boyd Dahle** to chief engineer, **E. A. Jachacz** to project engineer-pneumatics, **Roy E. Gass** to design layout engineer, **Felix H. Tevis** to administrative engineer and **George Williams** to quality control manager of the manufacturing division.

Pratt & Whitney Aircraft Division appointed **Arthur A. Merry** chief of advanced tool engineering, **Edward P. Bullard, III,** chief of production engineering, **Leete P. Doty** superintendent of the new North Haven plant and **Wilder G. Emond** to replace Doty as superintendent of the Southington plant.

Lockheed Aircraft Corp. appointments include **C. A. Forter, Jr.,** as plant manager of the Palmdale jet flight test base; **James V. Carmichael** as vice president at Marietta; **Daniel J. Haughton** as general manager at Marietta; **Harvey R. Campbell** as staff adviser to Carmichael; **A. C. Kotchian** as director of financial operations at Marietta.

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New Regulations for 'Air Taxi' Operators

CAB has eliminated the classification of air carriers known as "small irregulars" and substituted a new class of "air taxi operators." New regulations which become effective February 20 accomplished the change. Over 2,000 operators of small aircraft (under 12,500 pounds maximum certificated take-off weight) are affected.

Major effect of the move is abolition of "letters of registration" for all small operators and elimination of reporting requirements for most of them. Only those operating aircraft in passenger service with more than five seats will still be required to submit annual reports.

Air taxi operators will be permitted to engage in unlimited "jitney-type" operations as a connecting service with certificated carriers. New regulations affect only those carriers within the continental United States. Others in territories such as Alaska will continue operations under existing regulations.

Obituary

J. D. Crane

Jefferson Davis Crane, 43, vice president in charge of engineering, planning and inspection for National Airlines, died January 20 at his home in Miami from a heart attack.

A veteran of more than 25 years in the aviation industry, Crane held one of the original Air Transport Licenses.

He joined National Airlines at St. Petersburg in 1936 when the airline was two years old. He was also a former instructor at Yale University Flying School and was connected with the Lenox Brothers Flying School, West Haven, Conn.

Together with G. T. Baker, National's president, he designed the first commercially used T-type hangar in the commercial aviation industry.

He is survived by his wife, Mrs. Nell Q. Crane, two daughters, Carolyn and Elsie, and two sons, John D. and Charles E., all of Miami, and by a brother, of Los Angeles, Calif.

Halsey R. Bazley

H. R. Bazley, director and former president of all-American Airways, Inc., more recently associated with Aerodex, Inc., of Miami, Fla., was killed Jan. 22 in the crash of an Aerodex company Lodestar at Miami International Airport. Well-known among pioneer pilots, Brazley was prominent in the development of All-American's famous air mail pickup service, which became the basis of many of its present routes.

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Wings of Yesterday

25 Years Ago

The contract for carrying mail by air on the western section of the government route between Chicago and San Francisco was awarded to Boeing Airplane Co., Seattle, Wash., on its bid of $.10 a pound for the first thousand miles and 15c a pound for each additional 100 miles. The route was 1,906 miles long. All bids for the service between New York and Chicago were rejected and were to be readvertised.

GENERAL

Wanted concession space airport pass. terminal by experienced travelwear haberdasher. Need minimum 10x12 closed or open. Write Phil Smookler, Cuyama, Calif.

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WANTED—Local Service Airline has two openings: (1) Experienced Traffic Man. (2) Experienced Sales Manager. Give complete information. Write Box 751, AMERICAN AVIATION Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C.

MECHANIC: Licensed A&E with several years DC-3 experience. Supply and stockroom background also preferred. Unmarried. For excellent position with small overseas airline. Reply in detail to Box 755 AMERICAN AVIATION Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C.

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United-Western Appeals Dismissed by Court

Appeals of United Air Lines and Western Air Lines for relief from an order of the California Public Utilities Commission requiring refunds on Los Angeles-San Francisco coach tickets have been dismissed by the Supreme Court "for want of substantial Federal questions." Refunds, $1.75 on each coach ticket sold between March 1 and May 3, 1951, were ordered by the Commission last spring when the intra-state coach fare was increased at the request of CAB but without the approval of the Commission.

Fare was increased from $9.95 to $11.70 on March 1, in line with CAB's request. The California body did not approve the hike until May 9, and ordered refunds on all tickets sold during the interim.

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Airport News Digest

Correction: **It was erroneously reported in the Jan. 21 issue of AMERICAN AVIATION that the Gulf Oil Corp. will pay for construction of a $200,000 hangar at the Broome County (N. Y.) Airport in return for permanent rights to supply the airport with aviation gasoline and other petroleum products. The Gulf Corp.'s W. B. Lenkard, assistant general manager, retail sales, states that the report is "without foundation." Broome County Aviation Commissioner Douglas C. Wolfe has stated that the county is contemplating construction and has requested suggestions as to type, size, and method of financing. Our apologies to the Gulf Oil Corp. for an unintentional misstatement of fact.**

Future Development: CAA's sixth annual report of operations under the Federal Airport Act presents a summary of the type and kind of airport development needed for the United States and territories during the next three-year period under normal conditions. The report states that the planned expansion depends upon availability of materials and budgetary considerations. The summary follows:

Airport Service Type (Required)	New Airports	Existing airports to be improved	Total
Personal	1,524	786	2,310
Secondary	350	798	1,148
Feeder	75	581	656
Trunk	12	291	303
Express	3	74	77
Continental and up	5	59	64
Sub-totals	1,969	2,589	4,558
Seaplane bases	257	47	304
Heliports	62	21	83
	2,288	2,657	4,945

Seaplane Bases: **Information on the country's seaplane bases has been compiled in a newly revised edition of the CAA Seaplane Facility Directory. The booklet contains data on number and length of landing lanes, services available, lighting, fuel, and location of the facilities. It is available from the Government Printing Office at 10c per copy.**

HANGARS

• Pan American World Airways is planning early construction of a hangar expected to cost about $750,000 at the Seattle-Tacoma (Wash.) International Airport. Upon completion of the project late this year, Pan American will transfer its Alaska and trans-Pacific operations from the Seattle King County Airport to Seattle-Tacoma Airport.

TERMINAL BUILDINGS, AREAS

• Architects for the new Cleveland (O.) Hopkins Airport terminal building have advised the new construction will cost $6,262,190 instead of the $4,500,000 originally anticipated. They added that construction could be confined at first to part of the total program totaling less than $4,500,000.

• CAA's Office of Defense Requirements has granted authorization to the city of Birmingham, Ala., to build an addition to the terminal building at the city's Municipal Airport. Estimated cost: $64,000.

• Construction of a new $135,000 administration building at the Iowa City (Ia.) Municipal Airport is now beginning.

MISCELLANEOUS

• City of Great Bend, Kans., has authorized the drilling of an oil well on the city's new airport site, after an oil exploration company advised there was possibility of oil beneath the site.

• Miami International Airport handled about 375,000 passengers more in 1951 than in 1950, while the mail load during the same period was up nearly 750,000 pounds.

• Contract of $1,411,889 has been awarded for the final phase of a construction project which will take the Los Angeles, Calif., Sepulveda Blvd. under the city's International Airport runway extension.

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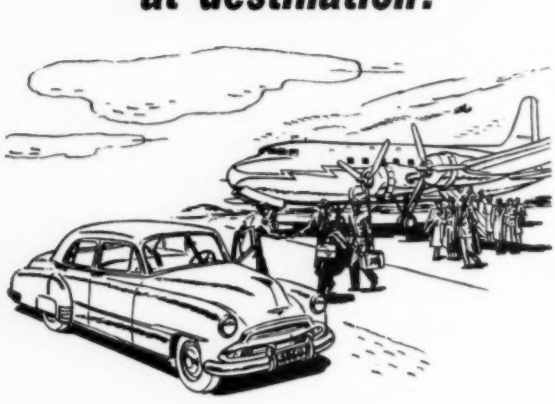

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★ Your passengers, renting cars from Hertz at their destination, can be sure of fine, new cars that are clean and properly conditioned. Gas, oil and *insurance* are included in low standardized rates—no hidden extras, no minimums.

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In Defense of Radar

USE OF RADAR as a primary traffic control aid was seriously set back during the month of January by two airline accidents in which radar was incorrectly blamed for functions it was not performing. In both cases radio and newspaper accounts charged that inoperative or faultily operating radar gear left the pilot with inadequate guidance.

The effect was immediate. At Washington National Airport, where the industry is using radar departures in initial service which should lead to widespread use later on, pilots refused to accept radar guidance. Pilots have the choice of routine or radar-aided departures. The number of pilots rejecting offers of radar departure guidance increased some 900% in the days immediately following the first of these two accidents.

These are the facts.

The first accident was a Northeast Airlines Convair 240 making an approach to La Guardia Field under instrument conditions. The flight was being monitored en route by surveillance radar which provided a good record of the flight path during the critical period. On the second approach into the field the plane overshot, made a crash landing in the East River. No one was killed.

Ill-advised comments by officials at the scene of the accident led reporters to believe the plane was making a radar approach. Actually the plane attempted a landing on Runway 22, the active runway. The Precision Approach Radar used for landing guidance is located on Runway 4. The pilot could not have been making a radar landing.

Part of the misunderstanding can be attributed to comments that the radar controllers, operating surveillance radar which tracks all aircraft within about 30 miles of the airport, had been tracking the plane when suddenly it "disappeared." This disappearance was attributed to radar failure.

Surveillance radar uses a large rotating antenna which scans the sky. Its antenna sends out signals in a directional manner, like a gun, and a plane in the path of this signal causes a reflection which is picked up by ground equipment and appears as a "pip" on a television-like tube. The antenna is directed slightly above the horizon and rotates at 30 revolutions per minute.

As the plane gets close-in to the airport, the surveillance radar scope is difficult to read, and precision approach radar takes over for the close-in guidance. PAR guidance was not possible on Runway 22 used by the Convair. Surveillance radar has no altitude information, only azimuth data being presented on the scope.

The NEA plane was monitored in its approach to the terminal area by surveillance radar. There was no way of telling the plane's altitude from radar scope data. As the radar antenna made one revolution, the plane was within the beam of the radar signals and showed as a pip on the scope. Two seconds later, at 30 r.p.m., the antenna made another sweep past the same point. The Convair had "disappeared."

Actually the plane had two seconds in which to reduce its altitude below the radar's coverage area. In making the water landing, the plane did just that.

Radar control was innocent.

Again at Elizabeth, N. J., on Jan. 22, when the American Airlines Convair crashed into a three-story building during an approach to Newark Airport killing 29 persons, radar was innocent. The AAL plane was making an Instrument Landing System approach, getting radar advisory information. Precision Approach Radar was available and in use. But the pilot was flying the ILS.

Weather at the time of the accident was officially reported as 400 feet ceiling and three-quarters of a mile visibility. As the airplane approached the airport, the radar controller tracked it. At 5½ miles from the airport he informed the pilot he was on the glide path (at the correct altitude) but 900 feet to the left of the course. At four miles he was 300 feet off course but approaching the proper course. At 3½ miles the controller warned that the plane was 900 feet to the right of the course, the pilot having overshot the localizer. Then the plane "disappeared."

Radar accurately reported the plane's position. The pilot was informed of the plane's position to supplement visual data provided by the ILS, which was used as his primary approach aid. When the plane disappeared from the scope, it did so because it had crashed into a building. No landing system could have saved the pilot and his precious cargo.

The experts feel certain the AAL airplane ran into trouble, probably engine icing, which accounted for its sudden drop below the area of coverage of PAR. Only time will tell.

The point is this. The aviation industry has established that radar will be the primary building block for traffic control. It may have shortcomings, points which have been discussed in detail elsewhere, but radar did not contribute to these two accidents for which it has been publicly blamed.

Pilots should weigh the facts in these cases carefully before abandoning radar's promising possibilities.

Privileges of Private Pilots

A REPORT from Montreal indicates that the International Civil Aviation Organization is considering increasing the privileges of private pilots. ICAO standards now on the books prohibit holders of private pilot licenses from flying for remuneration under any circumstances. This means that a private pilot may not act as a chauffeur, test pilot, or flying instructor.

At a current Montreal meeting of the Fourth Session of ICAO's Personnel Licensing Division, proposals are scheduled to suggest that this restriction be relaxed. The Personnel Licensing Division is composed of experts from ICAO's member states, whose jobs is the certification and training of aviation personnel. The duties of the division are to work out standard requirements for the award of flight crew and ground crew licenses.

The ICAO report points out that standardization is necessary because air procedures are the same the world over and pilots, radio operators, and air traffic controllers must be familiar with the procedures. As conditions become more demanding, higher requirements must be incorporated into the licensing certificates which signify that the holders are competent.

The introduction of jets and helicopters into the aviation picture, ICAO reports, may call for further changes in the licensing of pilots—particularly in the ratings required by a pilot to fly in cloud and along congested airways. These changes also require international standardization of courses of instruction used to teach both air and ground personnel.

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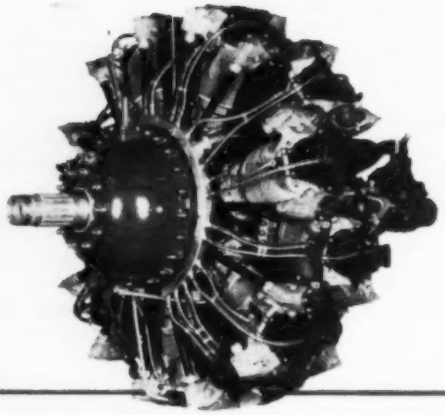

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J. H. "Jack" Gray
Municipal Airport
Atlanta, Georgia
December 27, 1939

S. W. "Stu" Butterfield
National Airlines, Inc.
St. Petersburg, Fla.
December 29, 1939

Frank C. White
National Airlines
St. Petersburg, Fla.
December 29, 1939

Henry A. Moreau
National Airlines
St. Petersburg, Fla.
December 29, 1939

H. S. "Hank" Eads
National Airlines
St. Petersburg, Fla.
December 29, 1939

W. I. "Bill" Denning
Aviation Counsel
at St. Petersburg, Fla.
December 29, 1939

Gene Denning
(Mrs. William)
at St. Petersburg, Fla.
December 29, 1939

Harry S. Parker
National Airlines
St. Petersburg, Fla.
December 29, 1939

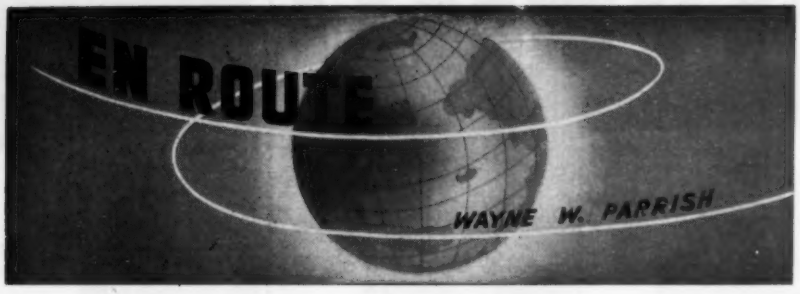
Helen (Mrs. Ray) Peck
Pratt & Whitney
at St. Petersburg, Fla.
December 30, 1939

J. A. "Jerry" Waterman
Maas. Brothers of Tampa
at St. Petersburg, Fla.
December 30, 1939

A. B. "Mac" McMullen (QB)
Civil Aeronautics Authority
at St. Petersburg, Fla.
December 30, 1939

R. Z. "Bob" Peck
National Airlines
St. Petersburg, Fla.
December 30, 1939

S. Ellsworth Sims
Delta Air Corp.
at Homestead, Fla.
January 2, 1940



Here are more notes on my trip to Yugoslavia:

Up at 5:30: The working hours for government offices in Yugoslavia are 7 a.m. to 2 p.m., five days a week. This means that even the high-ups in government have to get up at dawn to be in their offices by 7. There is no break for lunch, but at 2 p.m. everything closes down for the remainder of the day.

I'm not sure of the reason for this arrangement, but it does have an advantage for government workers. There isn't enough transportation available for them to go home for lunch, and not enough restaurants for the lunch hour. So they work seven hours straight through and then go home. In a country with such poor economy this system would seem to work okey.

I would estimate that 90% of the total population gets up at 5:30 a.m. or earlier.

Camera Paradise: Yugoslavia is a photographer's paradise, especially for the colored-film fan. It is the one country available in Europe where peasant costumes are worn every day. Even in the capital of Belgrade the visitor sees unusual and picturesque clothing. Peasant women wear embroidered blouses, heavy skirts, and heavy wool stockings. There is color in all of the garments.

Many men wear shoes with turned up toe tips. Occasionally you can spot a Moslem girl or woman wearing bright red pantaloons. The men from each national section of the country have distinctive hats, some of them embroidered in bright-colored silk or other fiber. There are so many national and racial mixtures, each with distinctive garments, that the country is a never-ending parade of wonderful camera portraits.

Of course in Belgrade and other larger cities there is much ordinary western clothing worn, but you don't have to go far to find the peasants. Incidentally, it is almost a tie-less country. I would estimate that three-fourths of the men don't wear ties. The clothing is pretty well worn and has been in short supply. But on the other hand I never saw a beggar in tatters.

✦ ✦ ✦

Asparagus: I had lunch one day in the house of Col. Maurice Berry, the U. S. air attache in Belgrade. The only course was asparagus covered with sauce. It was one of the most delicious dishes I've ever had in my life. I had three big helpings. Give a good Yugoslav cook something to work with and you'll come up with mighty good food. The best food, apparently, is in the northern part of the country. Along the Dalmatian coast I thought the food was only fair and not cooked too well, although there was no shortage of it in the hotels.

Prussian: The only rough treatment I had in Yugoslavia was by the day clerk in the Majestic Hotel in Belgrade. He was sort of a Prussian type, bald-headed, and quite unlike the Yugoslavs I met every where. He was most officious and after telling me all one day I had to vacate my room next morning, he woke me up at 7:15 the next morning to tell me I had to move. I told him where he could go in no uncertain terms. I did move, as I had informed him I would, but in my own good time. Then I learned that a group of English tourists were arriving about 10:30 and my room was one of those reserved for them. The clerk simply couldn't be courteous to anybody, and I wondered what sort of racket he was running. Several times I saw him hand sandwiches in back of the counter to men who dropped into the hotel. He is one guy Putnik (the tourist agency) ought to throw out of the hotel—and out of the country.

✦ ✦ ✦

People are Good: I like the Yugoslav people. They seem to have a good sense of humor—a sort of resigned sense of humor about their own predicament. They want to be left alone. They are mostly individualists whose ancestors have eked out a livelihood from those hills for hundreds of years and don't want to be bothered by outsiders. But all of my contacts with the people were most friendly. Sometimes they were reserved, in a shy and hesitating sort of way, but except for that one hotel clerk they were courteous and often anxious to help out.

Primitive: The country is quite primitive. Sanitation facilities are negligible in many places, but every important city has hotels with clean beds and clean rooms. I certainly had no complaint about the rooms. They weren't luxurious but the beds were comfortable. Each room had running water, although hot water was on the scarce side. But if you want a bath you may have to wait a while. I had one of the few rooms-with-bath in the country for my first two nights. Then I went eight days without a bath. Nobody ever mentioned a bath and I never saw a bathroom or bathtub. But after the third day you just sort of forget all about having one.

My one complaint is the limited toilet facilities. Usually one toilet for a hotel floor, except in larger hotels where they may have several, or even separate ones for men and women. But these toilets are usually in very poor condition and get fearfully dirty. In the town of Split I had a very nice, clean room. The hotel itself was clean and well painted. Everything was fine—except the one toilet for the floor which was in abominable condition at all times.

✦ ✦ ✦

Bureaucracy: I've traveled in plenty of primitive countries but there's a big difference between all of the others and Yugoslavia. The latter country is communist. All hotels are owned and operated by the government. All of the help works for the government. So there isn't the incentive anywhere to maintain a high-class establishment. The idea of luxury, for example, is anathema to a socialistic state where equality is supposed to prevail. And ideological equality inevitably results in mediocrity.

Then, too, if you are a good and loyal worker in Yugoslavia you get the privilege of going to a resort hotel for a vacation. I have no quarrel whatsoever with the general idea. But Yugoslavia wants tourists from the outside, and tourists seeking pleasure and comforts can hardly be expected to enjoy themselves surrounded by unwashed, unshaven, and unkempt laborers on their first holiday.

Opatjia: Take the resort of Opatjia, in the upper reaches of the Adriatic. It has perhaps 50 or 75 hotels and once was quite a good resort patronized by people from all over Europe. Because of the disastrous war and one thing and another, the hotels are now pretty well run down. But Opatjia is in a nice setting, and it could again become a popular place for vacationers from other countries.

But hotels operated by former farmers or railroad conductors or barbers aren't going to be successful. Everything seems a little shabby. A resort needs the touch of the promoter and the entrepreneur—private enterprise. The lowly laborer is getting a break by being able to fill up resort hotels, but this doesn't help the economy of the country. Tourists expect more than they can get at Opatjia.

Too Much Art: One of the aims of a communist leader is to make stabs at bringing the fine arts to the masses. Some of this is very praiseworthy, but sometimes it's overdone. One afternoon I walked to the big park at the east end of Belgrade and heard some very fine music being played from loudspeakers scattered around the park. It was very pleasant. I have often reflected on how backward the U. S. is in providing really good music for the public. Thanks to the low mentality of our radio station operators, we get all too little good music on the air, and when we do get it, it's wrapped up in blue ribbon as if to say, "Okey, we've got to go cultural for an hour so you'd better sign off." This idea of providing music in public parks, as in Belgrade, is commendable.

Tito's regime has gone overboard to patronize the arts. Artists get big merit awards and live better than almost every other class of people. Every town has art exhibitions all over the place. Everybody will agree that encouraging the arts is a fine thing, but poverty-stricken Yugoslavia tried to stir up the arts before tackling the fundamental job of economics. Production first, arts later, should have been the goal.

CIVIL

New officers of the Conference of National Aviation Organizations include Joseph T. Geuting, Jr., manager of Aircraft Industries Association's personal aircraft council as president, J. B. Hartranft, Jr., general manager of the Aircraft Owners and Pilots Association, as co-chairman and C. C. Thompson, executive secretary of the Airport Operators Council, as secretary-treasurer.

CAA has increased the allowable charge for conducting private and commercial pilot examinations to $7.50. Additional pilot rating tests may be charged for at $5. Aviation safety agents' flight exams are still provided without fee but these sometimes involve a waiting period.

U. S. Government has appealed a federal court ruling awarding Wichita, Kans., $11,064,515 ("Newsletter," Jan. 14) for its former municipal airport taken over by the USAF. But the U. S. has given Wichita $5 million as a down payment and contracts for construction of a new airport have been let.

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AIRLINES

Pioneer Air Lines has just about given up hope of obtaining nine Martin 2-0-2A's to replace its 13 Douglas DC-3's because Martin is said not to be in a position to make the planes available. The 2-0-2A's were to be obtained as Trans World Airlines turned them back to Martin for 4-0-4's. Pioneer president Robert J. Smith said there is "no probability" of obtaining the planes because of Martin's recent financial troubles.

American Airlines expects to increase its transcontinental 70-passenger DC-6 flights to four a day by March 23. AA thus will have 280 seats going in each direction at a one way fare of $99.

In a follow up to a recent Supreme Court ruling ("Newsletter," Jan. 21), the California Public Utilities Commission filed penalty suits for $138,000 each against United, Western and California Central airlines for charging Los Angeles-San Francisco fares approved by the CAB but not by PUC. In addition, the PUC told United to apply for the increase the carrier put into effect last summer between L. A. and Catalina with CAB approval. The PUC apparently feels Court dismissal of the appeal gives it full jurisdiction over fares within California. But CAB believes there has never yet been a court test of its power to over-ride fare rulings by state commissions. More legal action is probable.

Braniff Airways and Mid-Continent Airlines have agreed to merge if the CAB approves, with Braniff being the surviving company. MCA stockholders would turn in 1½ shares for every share of Braniff stock they receive. A similar proposal was made 10 years ago.

Bonanza Air Lines has started making survey flights over its 420 mile extension from Phoenix to Los Angeles and expects to start the service April 1. Western Air Lines, meanwhile, is planning to fight the CAB award, which entails suspension of WAL's service at El Centro and Yuma.

California Central Airlines has dropped its two daily schedules to Edwards AFB because of insufficient traffic but is continuing its service between Burbank and the Naval Ordnance test station at Inyokern.

Air Transport Association reports the 1951 record for scheduled airlines shows 1.3-1.4 fatalities per 100 million passenger miles. These are based on recorded fatalities for 10.5 billion passenger miles flown by scheduled airlines. ATA's figures for non-sked's, based on one billion passenger miles, are between 7.2 and 7.4 per 100 million passenger miles.

Reed Pigman, president of American Flyers Airline Corp., followed two other members of the Independent Military Air Transport Association "Newsletter," Jan. 28) in criticizing IMATA head O. Roy Chalk for his "statement of policy." Chalk, meanwhile, "clarified" his statement by declaring that IMATA does not wish to take part in any investigation and does not want to indulge in any muck-raking. "We only pointed to some well-known evils of the industry and these have been referred to in the past by government authorities, including the CAB," he said.

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CIVIL AERONAUTICS BOARD

Piedmont Aviation has been recommended for a 10 year renewed certificate by CAB Examiner Ferdinand D. Moran in recognition of the line's "outstanding" record and to provide incentive to manufacturers to develop an economical short-haul airplane designed for the local service industry. It is the longest renewal ever recommended for a local line and would, if granted by CAB, be the longest ever issued. Moran, emphasizing expansion, also recommended these route modifications: (1) a new segment between Richmond and Knoxville via Lynchburg, Roanoke and Bristol with American Airlines suspended at the intermediates; (2) addition of Hickory, N. C. with Capital Airlines suspended at the point; (3) an extension from Wilmington, N. C. to New Bern, N. C. and extension from Beckley, W. Va. to Lexington, Ky.

California Helicopter Company's request for an exemption to conduct helicopter services within an 85 mile radius of San Francisco International Airport was denied by CAB. Board ruled the issues were too complex to decide short of public hearings and deferred further action until a certificate application of the company is heard.

CAB's investigation of the large irregular air carrier industry was expanded to new proportions last week when 119 new applications for various types of operating authority were filed by the non-skeds. Filings were in line with a "clarification" order issued by CAB on Jan. 8, in which it was specified that those desiring certain-type certificates should file specific applications Generally, the authority sought in the applications

is to perform: (1) non-scheduled supplemental and additional air service within the continental U. S. and between points in the U. S. and points outside, and (2) limited scheduled air service within the continental U. S. and between points in the U. S. and points outside.

Central Airlines' bid for certificate renewal met no opposition at two weeks of CAB hearings but its proposed extension through Arkansas to Memphis was strongly opposed by Pioneer Air Lines and Trans-Texas Airways, both of whom have applied for similar extensions. Central's president Keith Kahle urged the new routes because, he said, it would permit Central to spread its costs. Pioneer's president Robert J. Smith, agreed in principle, but said a line should first develop its basic route and then think of cost-spreading expansion. TTA's head, R. E. McKaughan, said his line would be the logical one to get the new routes at issue because it would complete the pattern of local service airlines between Texas and the east by linking TTA with Southern Airways.

Trans-Texas Airways asked CAB to institute an investigation aimed at possible suspension of Braniff Airways' service at Brownsville and Corpus Christi, Tex. Suspension would be for the life of renewed certificates for TTA's segments 2 and 6 which otherwise are slated to expire March 31. Segment 2 is between Brownsville and Mission and segments 6 between Mission and San Antonio via Corpus Christi. Main body of TTA's routes does not expire until March, 1954.

Fact-finding report of CAB Examiner S. Thomas Simon indicates that the Curtiss C-46 meets performance requirements of Part 3 of Civil Air Regulations, rules under which it is operated by the non-scheduled air carriers, and tests conducted to date by CAA and the airlines show no justification for reducing the gross operating weight of the plane below its currently authorized level of 48,000 pounds. Report was in connection with a CAB proposed regulation which would cut the gross operating weight to 43,500 pounds.

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LABOR

Chance Vought Division of United Aircraft Corp. and the UAW-CIO reached agreement on eight union grievances, ending the possibility of a strike there.

A Wage Stabilization Board panel started hearings in a wage and union shop dispute involving Boeing-Wichita and the IAM-AFL.

National Labor Relations Board ordered hearings on UAW objections to the recent election at Bell-Fort Worth. IAM won in a run-off election after UAW led in the first balloting.

IAM mechanics for Northwest Airlines started a "slowdown" by reporting "sick" in several cities but returned to their jobs after the National Mediation Board said it would not conduct talks while the slowdown was in progress.

Labor Department's Bureau of Employment Security predicts 625,000 will be on the payrolls of aircraft and parts builders by April. Three out of four plane companies are reporting trouble in hiring help.

WSB has approved an agreement reached between Lockheed and the Engineers and Architects Association calling for a 2% pay hike retroactive to Oct. 29 and premium overtime pay.

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FINANCIAL

Airlines

United Air Lines will pay a 25c dividend on its common stock March 15 to stockholders of record Feb. 15. A $1.125 dividend on the 4½% cumulative preferred stock will be paid March 1 to stockholders of record Feb. 15.

Manufacturers

Beech Aircraft Corp. reported a first quarter net to Dec. 31 of $391,627 on sales of $17,231,182. Comparable period last year netted $126,455 on sales of $5,405,361. Stockholders of record Jan. 31 will receive a 20c dividend Feb. 15. Backlog now exceeds $170 million.

North American Aviation netted $6,421,612, or $1.87 a share, on sales of $179,443,376 for the fiscal year ended Sept. 30 as against a net of $8,086,255, or $2.35, on sales of $143,268,418 for the previous fiscal year. Backlog is near $1 million.

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AROUND THE WORLD

A new German airline will definitely be established this year, according to Dr. Knipfer, head of the German Civil Aviation Department. He said the airline will operate about 10 twin engine transports, probably U. S.-built, over internal routes in West Germany.

Aerosomala, a new airline backed by Italian and Somali capital, has been organized in Italian Somaliland. The carrier will probably use Curtiss C-46's on its routes between Somaliland and Ethiopia.

Dutch firm of De Schelde, which recently started licensed production of the Saab Safir-91B trainer for the Swedish Air Force, is planning to boost its output to 10 a month.

France's Nord 2501 twin engine cargo transport for the French Air Force has reached 286 mph at full throttle and in straight and level flight. Cruising speed is reported at 230 mph.

French SNECMA TB-1000A turboprop developed over 2,000 equivalent shaft horsepower during a recent test bench run.

Britain's BOAC has ordered 10 more Bristol Brittania 175 turboprop transports, boosting its total order for the 350 mph plane to 25. Prototype will probably fly this summer with deliveries starting in 1954. Bristol Aeroplane Co., meanwhile, says it is conducting "important negotiations for export sales" of the Brittania.

Air India International has ordered two Lockheed L-1049C Super Constellations for delivery early in 1954. It had considered ordering de Havilland Avon Comets but found they could not be obtained before mid-1955.

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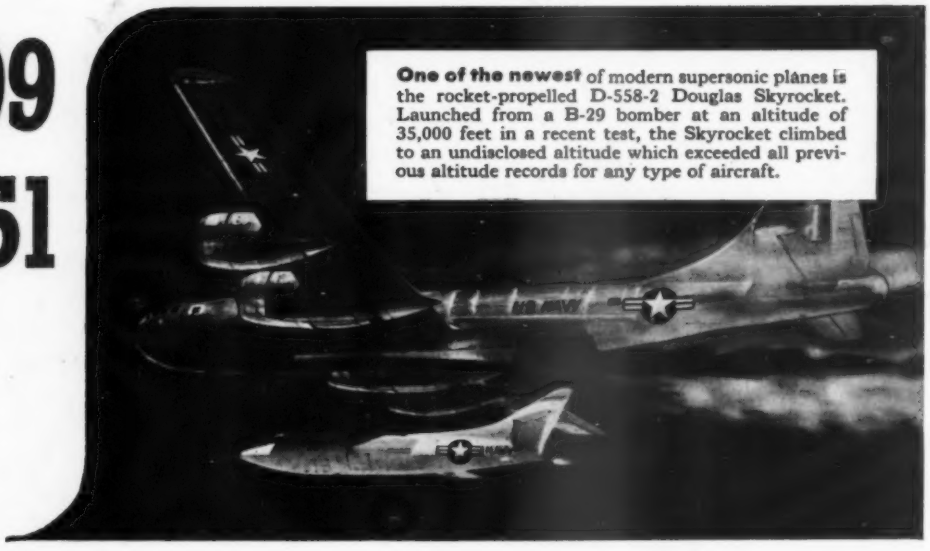
Record Breakers 1909 1951

154.5 kilometers in 2 hours 18.9 minutes (about 42 MPH) was a world's record *for speed* set by Hubert Latham, at Rheims in 1909. This same year Latham made two unsuccessful attempts to fly the English Channel but was forced down each time when his engine stalled.



One of the newest of modern supersonic planes is the rocket-propelled D-558-2 Douglas Skyrocket. Launched from a B-29 bomber at an altitude of 35,000 feet in a recent test, the Skyrocket climbed to an undisclosed altitude which exceeded all previous altitude records for any type of aircraft.

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NEWSLETTER

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Entered as Second Class Matter February 11, 1952 Vol. 15 No. 37

All but one of the 16 "grandfather" trunk airlines (Big Four excluded) are now involved publicly in some sort of merger agreement or proceeding, and prospects for reducing the number of trunks this year appear good. Of the 12 regional trunks, only Chicago and Southern is not on record in one way or another.

Latest merger agreement was that reached by directors of Capital Airlines and Northwest Airlines. Stockholders and CAB must still approve the deal which, NWA says, would make the merged company (Northwest-Capital Airlines) the largest domestic carrier in terms of route mileage, ahead of United and American.

NWA-Capital agreement calls for one-for-one exchange of common stock in merged company, with NWA's preferred stock remaining outstanding as an obligation of the new firm. J. H. Carmichael, Capital's president, will be president and chief executive officer, with Croil Hunter, NWA president, as board chairman.

Two other trunks are involved in mergers more through a technicality than anything else. Continental is in the CAB-initiated proceeding to determine why it shouldn't merge with Mid-Continent, but CAB shelved the case following the fast Braniff-MCA agreement. Western is merging with Inland, its subsidiary, but Inland is still officially one of the 16 original trunks.

National-Colonial and Delta-Northeast are other mergers now in the proceeding stage. The latter is the most complicated one, involving new connecting route mileage, unless Capital should dispose of its southern routes to Delta, thus providing most of the connecting link with NEA.

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Maximum take-off weight for Curtiss C-46 aircraft was reduced from 48,000 to 45,000 pounds in an emergency regulation issued by the Civil Aeronautics Board last week. New rule, applicable to C-46's used in passenger operations, took effect at 12:01 a.m., Feb. 3. CAB said it is issued in the interests of safety and indicated that recent C-46 accidents were partly responsible for the emergency action.

Expected to have a "certain economic impact" on non-scheduled airlines, heaviest users of the plane, the new rule was subject to sharp legal maneuvering in and out of Washington courts. Twelve hours before the rule was to take effect, a District Court Judge issued a restraining order. Six hours later, after hearing CAB's attorney at his home, he dissolved the restraining order and ordered court hearings.

Another jurist, Judge James W. Morris, heard arguments of CAB and attorneys for Council for C-46 Engi[illegible] on [illegible] and denied motions for an injunction which would block the emergency regulation. He further ruled that CAB could enforce such a measure without holding public hearings.

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In a follow-up to a preliminary investigation of the noise and hazards to cities in the vicinity of Newark Airport, Sen. Edwin C. Johnson, chairman of the Senate Interstate and Foreign Commerce Committee, came up with seven recommendations. They cover the use of certain runways at Newark when possible, raising instrument weather minimums until a new instrument runway is ready, making low altitude turns after take-offs to avoid congested areas, etc.

Air Transport Association officials announced a seven-point program of their own. Besides taking over some of the Senate Committee's recommendations, ATA called for (1) all planes operating in congested areas to follow the approach and departure procedures now used by airlines; (2) all planes flying in these areas to have two-way radios and navigation aids; (3) adequate baffling mechanisms for transports to muffle the noise level while engines are being warmed up.

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While Congressmen have started investigations into aviation safety, they are ignoring the impending loss of at least 65 skilled technicians who contribute to make air operations safe.

CAA's current lack of payroll funds will mean that 65 air traffic controllers, including 29 in the Region 1 (New York) area, will be laid off after Feb. 23. Thus far no steps have been taken to supply CAA with supplemental funds to keep these men on their jobs beyond that deadline. An undisclosed number of communicators will also be furloughed on that date.

Some areas have had to restrict operations because they lost air traffic controllers to the military. The Air Force, recognizing the condition, has permitted some uniformed controllers to return to their civil jobs while wearing the uniform and drawing military pay.

But the present shortage of payroll funds, unless Congress acts quickly, will probably mean that most of these air traffic controllers will be gone for good. Except for possible supplementals, no new CAA funds will be available until the end of fiscal 1952, June 30. By that time these men [illegible]

REFERENCE COPY

[illegible] Department's fiscal 1953 aircraft program calls for orders for several new fighter types, more orders for the B-36 and possibly USAF

adoption of a Navy-developed jet bomber to supplement the B-47. Here's the program:

Air Force: Convair B-36 and Boeing B-52 will be reordered while the Convair B-60 will be ordered if appropriations are adequate. Boeing B-47 orders will be placed, but on a smaller scale than had been planned. Martin will receive contracts for its B-57A and the AF may order the Navy's Douglas A3D. **In the fighter line,** more orders will be placed for several versions of the Republic F-84 and North American F-86, as well as the Lockheed F-94C and Northrop F-89. The North American F-100 (super F-86), McDonnell F-101 (advanced F-88) and Convair F-102 (based on the XF-92) will all be ordered. **Reorders for cargo planes** will include the Fairchild C-119, Douglas C-124, Chase C-123, Boeing KC-97, Lockheed C-121C and Douglas C-118A. **New cargo planes** will be the Convair C-131A (military Convair 240) and possibly the Lockheed C-130 air freighter. **Training planes,** including the Convair T-29, Beech T-36, Lockheed T-33 and North American T-28, will all be ordered, as will the Grumman SA-16 and **two helicopters,** the Piasecki H-21 and Sikorsky H-19. The giant Piasecki XH-16 may also get a large order.

Navy: Attack bombers to be ordered in 1953 include the Douglas A3D, AD Skyraider and A2D Skyshark, the Chance Vought AU piston plane, a new version of the North American A2J Savage and probably the Grumman AF series. **Fighters** will include the North American FJ-2, the McDonnell F3H Demon to succeed the F2H Banshee, the Grumman swept wing F9F-6 and possibly the F10F, the Douglas delta F4D and the Chance Vought F7U Cutlass. **Navy transports** will be the Douglas R6D, Lockheed R7O-1, the Fairchild R4Q (C-119), Douglas R4D-8 (Super DC-3) and possibly the Convair R3Y flying boat. Orders for **Navy trainers** will go to Lockheed for its TO and probably for a new basic trainer, as yet undetermined. Included in **helicopter orders** will be the Piasecki HUP, Sikorsky HO4S and HO5S, the Bell HTL and probably either the Sikorsky HRS or a new Piasecki model.

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Priorities for producers of aircraft components apparently will not be granted until the fourth quarter of 1952, despite an understanding by the Munitions Board that they would be started as quickly as possible ("Newsletter," Feb. 4).

American Aviation

NEWSLETTER **Vol. 15, No. 37**

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American Aviation is published every Monday by American Aviation Publications, Inc., Washington, D. C. Printed at the Telegraph Press, Harrisburg, Pa. Subscription rates for United States, Canada, Mexico, Central and South American countries—$5.00 for 1 year; $8.00 for 2 years; $10.00 for 3 years. All other countries—$7.00 for 1 year; $12.00 for 2 years. Entered as Second-Class matter in Washington, D. C., and Harrisburg, Pa.
Editorial and business offices: 1025 Vermont Avenue, N. W., Washington 5, D. C. Telephone—STerling 5400.
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After NPA officials worked up a proposal whereby A-1 priorities for airplane components makers would be granted by the Munitions Board's Aircraft Production Resources Agency on a product basis, the military accepted it and informed the aircraft industry these priorities for placing CMP materials orders would start soon.

In accepting the plan, the Munitions Board imposed two conditions it considered rather minor. It felt certain, however, that the basic principle was mutually satisfactory and that the program would start even if its conditions were unacceptable to NPA.

Now, NPA officials have used these conditions to delay inception of the priorities program. The Munitions Board has been informed that components makers will follow their present system of filing with NPA's Aircraft Division for the second and third quarters at least and that A-1 priorities will not be applied by either APRA or the Aircraft Division during that time.

Observers believe the new NPA move is an attempt to hold on to the hundreds of firms which would be transferred to APRA's jurisdiction if the program ever gets started. NPA apparently feels its spot assistance program for placing materials orders will be working so well by October that priorities will not be required.

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Mobilizer Charles E. Wilson soon will issue a directive authorizing the Air Force and other government buying agencies to spend up to 10% more for materiel in areas where unemployment is prevalent than they would pay in other cities.

The forthcoming order is in line with a new government policy which approves premium payments in areas where civilian production has been curtailed because of reduced allotments of CMP materials.

Comptroller General Lindsay Warren has ruled that such premium payments are legal (for negotiated contracts only) but that they are subject to review at some future date.

This ruling tends to make USAF and other government buyers wary of the whole system. As a matter of fact, Max Golden, deputy for procurement in Air Force headquarters, says a decision will have to be made soon so that buyers will know which of many directives carries the most weight.

He points out that buyers are told to consider small business, distressed areas, plant dispersal, dual sources and numerous other factors before granting contracts but that no one has decided which of these often-conflicting directives is most important.

Nevertheless, the Air Force has started funneling contracts to distressed labor areas and expects to speed up the process.

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MANUFACTURERS

Ford Motor Co.'s Chicago plant has received a $30 million USAF contract to produce 10,000-pound-thrust Pratt & Whitney J-57 jet engines. The plant is already working on P&W R-4360 piston engines. One reason for the J-57 order is that Ford R-4360's were ordered partially curtailed

and the J-57's will be built by the surplus manpower.

Aircraft firms and other defense contractors have started receiving the two-part "Standard Form of Contractor's Report" from the Renegotiation Board. RB Form 1 must be filed by Mar. 1 for firms whose fiscal year ended before last Nov. 30 and by Apr. 1 if their fiscal year ended Dec. 31. Form 1B must be filed 60 days after these deadlines.

Lightplane shipments for 1951 by member companies of the Aircraft Industries Association were down sharply from 1950. AIA firms last year shipped 2,302 planes valued at $16,887,000 while 3,386 aircraft worth $19,157,000 went out in 1950.

Deliveries of all Lockheed F-94B's has been completed and the company is now centering all F-94 production on the F-94C thin-wing interceptor. Powered by a P&W J-48, the C model has a speed "over 600," a ceiling "over 45,000 feet" and a combat radius "over 500 miles."

Manufacturers Aircraft Association, which administers patent cross-licensing agreements in the aircraft industry, has re-elected William E. Valk president.

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PLANES AND EQUIPMENT

Aero Design and Engineering Co.'s twin-engine Aero Commander has been granted an approved type certificate by the Civil Aeronautics Administration.

Scandinavian Airlines System maintenance and overhaul shops at Kastrup, Copenhagen, and Fornebu, Oslo, have been certificated by CAA for the overhaul of U. S. built transports.

Navy has confirmed the existence of the Douglas XA3D, a twin-jet, swept-wing, carrier-based attack bomber with the engines slung under the wings in pods. It is said to be in the 600-700 mph class but has not yet flown.

First of four Beech YL-23 "flying staff cars" has been delivered to the Army Field Forces at Fort Bragg, N. C. The YL-23 is a military version of the Model 50 Twin-Bonanza.

Naval Research Laboratory has developed a new vortex thermometer capable of measuring air temperature within one-half of one degree while a plane is travelling at speeds up to 500 miles an hour.

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AIRLINES

All operators of Douglas DC-4's have been instructed by CAA to make immediate inspections of bonding tape on planes' elevators to make certain there are no tears in the tape. Operators of other large planes using tape of this type will be asked to make similar inspections. CAA acted after discovery that torn tape caused the elevator of a Capital Airlines' DC-4 to throw the plane into a vertical dive. Daily inspections will forestall any future incidents of this nature, CAA believes.

United Air Lines sold $10 million of debentures to help finance new equipment purchases, with $7.5 million being taken by Metropolitan Life Insurance Co., and $2.5 million by Mutual Life Insurance Co. Funds will be supplemented by cash on hand to pay about $36 million for 40 Convair-Liners and 12 DC-6B's slated for 1952-53 delivery. UAL also has standby credit of $16 million obtained last year from 33 banks and not yet used. Company will call in the 36,000 outstanding shares of its 4½% cumulative preferred stock. Holders may, until Mar. 18, convert shares into common at 4.219 shares of common for each preferred share, or redeem the preferred at $102.50 plus unpaid dividends of 21¼¢ per share.

TWA stockholders will be permitted to subscribe to one share of the company's common stock for each 10 shares held. Total of 243,988 shares will be made available at $21.25 per share. Offering is expected to provide $5,000,000, after expenses of sale, for general corporate purposes. Stockholders of record on Feb. 27, or such later date as the SEC registration statement becomes effective, will be entitled to subscribe.

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CIVIL AERONAUTICS BOARD

Six Class I mid-western railroads attacked a CAB examiner's recommendation that Mid-West Airlines' certificate be renewed and petitioned CAB for leave to intervene in the case and for reopening of the record and further hearings. Signing the joint petition were the Burlington, North Western, Milwaukee, Rock Island, Omaha and Union Pacific railroads. They hit a proposed extension of MWA to Denver, operation of the local line by Purdue Research Foundation and extension of MWA's certificate.

Southwest Airways' local service airline certificate was renewed by CAB through Sept. 30, 1954, and United Air Lines ordered to suspend trunkline operations at Santa Barbara, Monterey, Red Bluff and Eureka, Calif. Decision was by a 5-0 Board vote and was made in the face of a recently-instituted investigation aimed at merging Southwest and Bonanza Air Lines.

National/Colonial merger agreement was termed "hardly more than a tentative option agreement held by National" in a document filed by Delta and Northeast. Filing parties asked that the National/Colonial agreement be consolidated with CAB's New England-Southern States Merger Investigation. The "tentative option" charge was made in view of a provision in the NAL/Colonial agreement which states that NAL can withdraw "if on the consummation date Colonial's net worth is more than 10% less than on Sept. 30, 1951."

Northwest Airlines has been directed to show cause why it should not accept a service mail rate of 53c per ton-mile for domestic operations. Board also proposed new temporary rates for international operations designed to meet estimated break-even needs of $2,129,000 annually. Both new rates would apply from Jan. 1, 1952.

Emergency mail payment of $207,552 for Frontier Airlines was proposed by CAB to "avert irreparable damage" to Frontier's credit standing. Award is based on increased past period temporary rates which would bring total payments to a level at or less than experienced break-even need. It was proposed to permit FAL to meet initial payment on a $500,000 note.

Final mail rates which would return Hawaiian Airlines $482,075 annually have been proposed in a show cause order by CAB. Rates, which would average 15.32c per revenue mile, would apply from July 1, 1951. Also proposed is $113,594 total mail pay for the period Oct. 25, 1949 through June 30, 1951.

Renewal of Empire Air Lines' local service certificate until Dec. 31, 1955 was recommended by CAB Examiner Ralph L. Wiser. He also urged extension of Empire's routes from Pasco, Washington to west coast cities of Seattle and Tacoma. Extension would link Empire's system with that of West Coast Airlines with which it is involved in a CAB merger proceeding.

Eastern Air Lines applied for removal of current routing restrictions on operations to and from Pittsburgh. If granted by CAB, it would permit EAL to operate direct services out of the Pennsylvania city to southern points such as New Orleans and Houston.

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CIVIL

Harry K. Coffey, of Oswego, Ore., has been elected president of the National Aeronautic Association, and Joseph T. Geuting has been named chairman of the executive board. Geuting, manager of AIA's Personal Aircraft Council, resigned the acting presidency of NAA, which post he had accepted on a temporary basis last August. NAA will hold its 1952 annual meeting in Detroit on Aug. 28-29, preceding the National Air Races, which are expected to be held there over Labor Day weekend.

Port of New York Authority has received okay from CAA's Office of Aviation Defense Requirements to begin a $6,740,000 project involving construction of a runway, power and communications facilities at Newark Airport. In addition, Union Building and Construction Corp., Passaic, N. J., obtained emergency priority from NPA to enable it to procure certain items of machinery and equipment needed to expedite construction of new instrument runway 4 at Newark. Runway is to be completed by early October.

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LABOR

About 28,000 Douglas Aircraft workers in California receive a 2c an hour pay boost as a result of the increase in the cost-of-living index announced Sept. 15. UAW-CIO workers at Long Beach and members of the United Aircraft Welders-Independent at all three plants did not get the increase because they have not yet signed contracts.

Railroad and Airline Wage Board approved productivity pay hikes for 1,087 American Airlines employes. Raises of $6.94 a month will go to 730 stewardesses represented by the Air Line Stewards and Stewardesses Association while 357 workers represented by the Air Line Communications Employes Association will receive monthly hikes of $6.93.

Mid-Continent Airlines has signed a new contract with the Air Line Pilots Association-AFL covering 78 captains and 80 first officers. Pact will be in force until May 1, 1953.

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FINANCIAL

Airlines

Capital Airlines netted $1,756,490, or $2.25 a share, in 1951 as against a net of $1,066,841, or $2.02 a share, in 1950.

Northwest Airlines reported a preliminary net of $1,668,155 for 1951. In 1950 NWA had a net loss of $135,478.

Manufacturers

Bendix Aviation Corp. netted $11,818,600, or $5.58 a share, on sales of $340,540,415 for the fiscal year ended Sept. 30 as against a net of $16,954,116, or $8 a share, on sales of $219,419,794 for the previous fiscal year.

Texas Engineering and Manufacturing Co. is expected to net $1,250,000 on sales of $32 million for 1951. In 1950, Temco netted $397,826 on sales of $12,824,000.

Aeroquip Corp. netted $271,084, or 36¢ a share, on sales of $5,287,562 for the three months ended Dec. 31 compared with a net of $160,036, or 21¢ a share, on sales of $2,706,797 for the same period in 1950.

Waco Aircraft Corp. netted $128,652 on sales of $967,953 for the fiscal year ended Sept. 30.

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AROUND THE WORLD

Two Mexican affiliates of Pan American World Airways have ordered a total of 11 Convair 340's. Compania Mexicana de Aviation will take eight while Aeronaves de Maxico will get three. Deliveries start in 1954.

Sabena Belgian Airlines has ordered two more Douglas DC-6B's, boosting its total order for this model to eight. Deliveries begin early in 1953.

British European Airways increased its operating revenues by $4.8 million in 1951 but nevertheless had a net loss of $6,528,000, some $861,000 greater than the 1950 loss. Wage increases and the delay in getting the four-engine Airspeed Ambassadors into service are mainly responsible.

Danish government has granted a $480,000 loan to Scandinavian Airlines System as part payment for the Douglas DC-6B's SAS ordered for its transAtlantic coach service.

Braniff International Airways has opened its own sales offices in Argentina, severing the use of LADAR (Lineas Aereas Dodero Agencies y Representaciones) as its general agent in Buenos Aires. KLM Royal Dutch Airlines, which bought out LADAR in December, will continue to use the agency as its sales representative.

French research plane, the Dassault 430-30L, has made its first flight. It is to conduct research on problems resulting from the use of lateral air intakes on the Dassault 453 night fighter.

Test pilots working for the French Ministry of Supply have received pay boosts to about $6,700 a year. These civilian test pilots formerly earned $2,800. Navigators, flight engineers and radio officers have received salary jumps from about $1,400 to $3,640.